

DISTRIBUTION & WAREHOUSING

THE BUSINESS PAPER OF THE WAREHOUSE INDUSTRY

Vol. 24, No. 6

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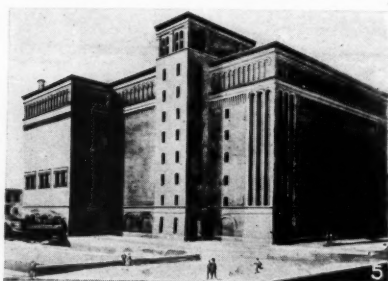
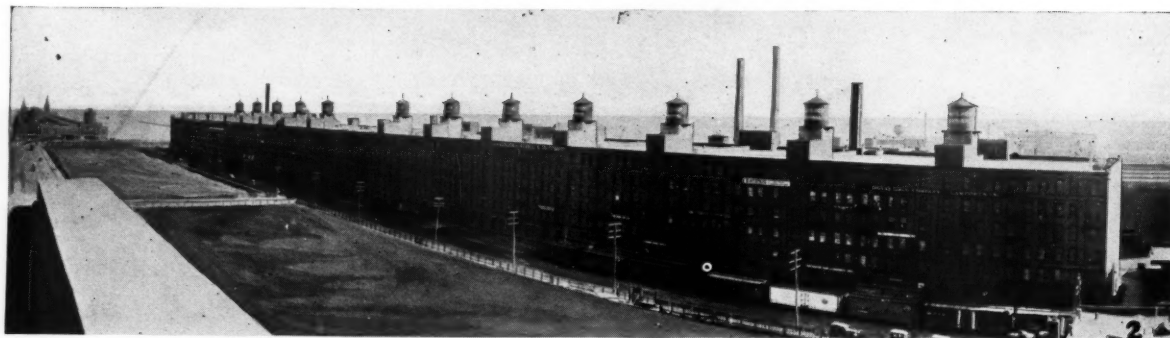
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Vol. 24 CONTENTS—JUNE, 1925 No. 6

ARTICLES

Substituting Machines for Men Cuts Costs 25 to 50 Per Cent. By J. A. Leslie, Jr.	8
Labor Lightened and Handling Speeded by Machine at Crooks Warehouse. By George F. Paul.	11
Tunneling Through High Rates. By W. J. Gavin.	14
Paper Is Stored by Machine at Cole Warehouse in Providence. By J. E. Bullard.	16
Conveyors, Chutes, Tray Elevators Reduce Radial's Handling Costs. By Ben S. Brown.	18
Lift Trucks, Telescopers and Hoists Cut Costs in Boston Warehouses. By S. F. Holland.	20
No Mechanical Loafers Allowed. By Fred L. Palmer	22
Warehouse Construction:	
The Merchandise Plant. By Charles H. Moores.	24
The Household Goods Plant. By George S. Kingsley	28
Points to Consider When Buying Trucks. By P. L. Sniffin	40
Public Warehousing and Economic Distribution. No. 3: How Warehousing the Goods Promotes Continuous Factory Operation. By H. A. Haring ..	49

TABLES

Directory of Material Handling Machinery.	32
Miscellaneous Warehouse Equipment.	36
Addresses of Gas and Electric Truck Manufacturers.	42
Gas and Electric Truck Specifications.	44

DEPARTMENTS AND NEWS

"Two Bits." (Vol. V; No. 12).	39
From the Legal Viewpoint. By George F. Kaiser.	58
Milbauer to Manage Port Newark Terminal.	62
Jacobs Secretary of Massachusetts Association.	62
Expansion Plans of National Terminals, Inc.	64
Norfolk Warehouses Leased to Harvey C. Miller.	64
Government Issues a Warehouse Treatise.	68
Convention Calendar	71

Classified Advertising	141
Index to General Advertisers.	142
Index to Shippers Index Advertisers.	143-144-145

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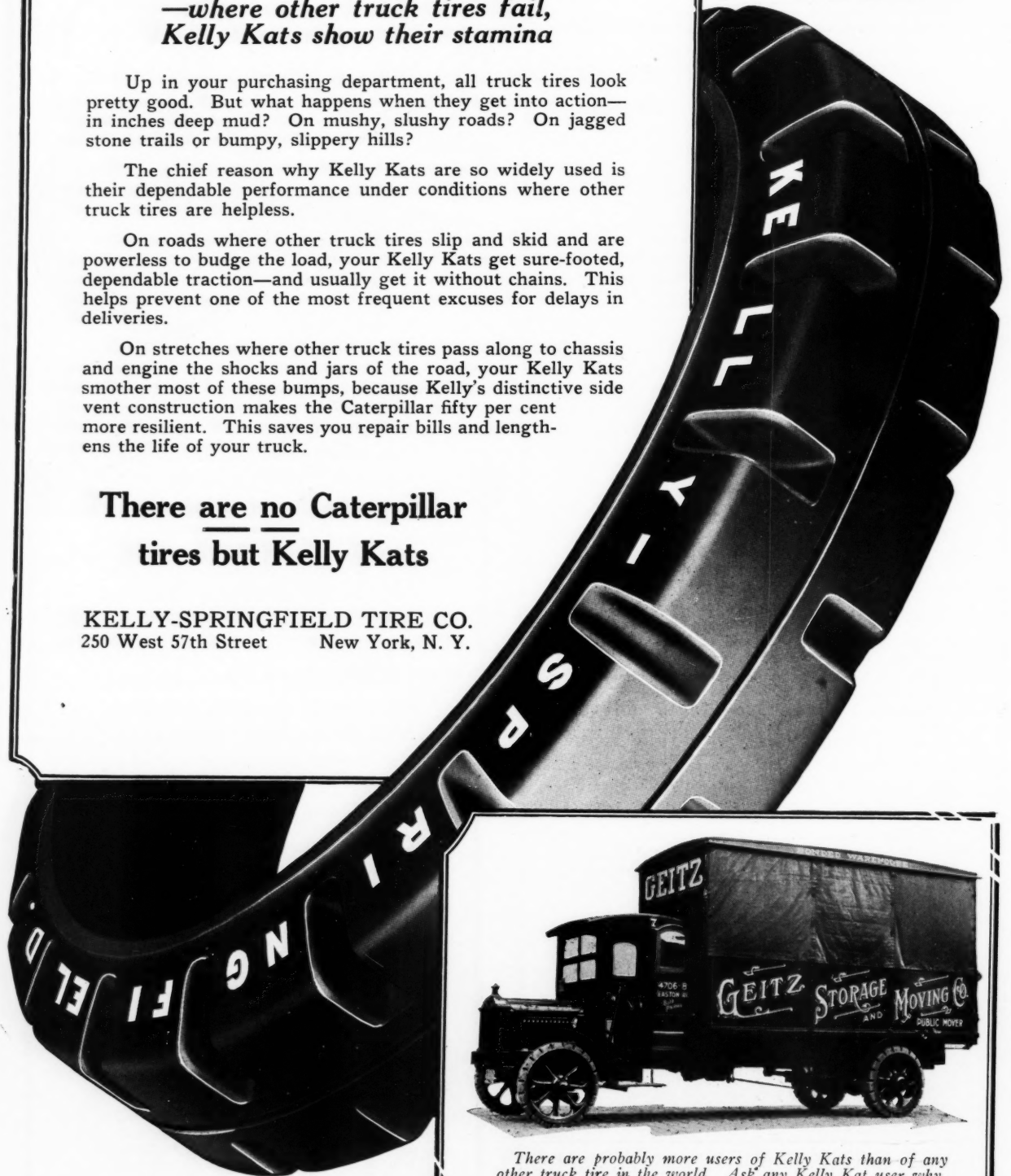
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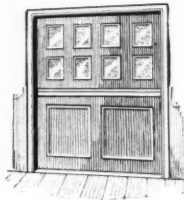
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DISTRIBUTION & WAREHOUSING

THE BUSINESS PAPER OF THE WAREHOUSE INDUSTRY

Volume 24

NEW YORK, JUNE, 1925

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How Your Competitor Saves Money by Using Material Handling Machinery

THIS is *Distribution & Warehousing's* annual issue devoted to the subject of material handling machinery and equipment in public warehouses. Class Journal Co. correspondents in various parts of the country tell, on these pages, of actual labor and cost saving installations in the operation of public storage plants—in Boston, Chicago, Kansas City, New York, Norfolk, Philadelphia and Providence and on the Pacific Coast. The stories deal with the actual use of chutes, conveyors, elevators, hoists, lift trucks, piling devices, tractors, trailers and other types which aid in cutting down the warehouseman's expenses by reducing manual labor and expediting the forward, upward and downward movement of goods.

The subject is one which *Distribution & Warehousing* believes is worthy of intelligent inquiry on the part of the executives of our industry.

Where is such equipment to be purchased? This information will be found in the buyers' index, beginning on page 32.

The gas truck and the electric van are important cogs in the warehouseman's machinery of operation. How shall they be selected to meet individual needs? Philip L. Sniffin, beginning on page 40, offers some suggestions in a text which introduces up-to-date specification tables of all types of commercial vehicles.

Warehouse construction, another timely subject of interest to the industry, is covered comprehensively in articles by two informed architects—Charles H. Moores for the merchandise and cold storage branches (page 24) and George S. Kingsley for the household goods branch (page 28).

Read how "the other fellow"—your competitor—is saving money through the use of material handling machinery and equipment!

Substituting Machines for Men Cuts Costs 25 to 50 Per Cent.

At Norfolk Plants of Southgate Forwarding & Storage Co.

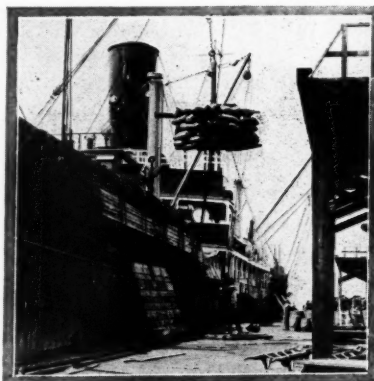
By J. A. LESLIE, JR.

"AND that is reason enough for substituting machines for men," says G. W. Cherry, superintendent of the Southgate Forwarding & Storage Co., Norfolk, having pointed out to Mr. Leslie, author of this article, that through the use of material handling equipment at the Southgate warehouses "operating costs are cut from 25 to 50 per cent." What machinery is installed at the Norfolk plants and what it does is briefly as follows:

One industrial gas tractor and one automatic electric tractor, each with trailers, cut down handling costs 50 per cent.

Two electric barrel hoists reduce labor expense one-half.

Two tiering machines for heavy merchandise cut labor costs 33 per cent.



Specially built swinging platform used by Southgate company to eliminate breakage when unloading steamship

One gravity conveyor for small package commodities effects 20 to 40 per cent saving.

Eight spiral chutes for small case goods cut labor costs, the saving in electricity alone justifying their use.

Ninety-one hand trucks and twenty four-wheel short-radius trucks take care of the loading and unloading of cars at the doors.

The Southgate company will soon be operating also at Portsmouth—and there the machine will substitute the man wherever practicable. Mr. Cherry says:

"Our experience in Norfolk has shown that handling machinery pays an enormous dividend wherever it can be fitted in. At Portsmouth we expect to have it in every operation where there is room for it."

IN many sections of the South, where common labor is extremely plentiful and cheap, business concerns have been rather reluctant to see the benefit of replacing man power with machinery, particularly in those pursuits in which either can perform efficiently. The Southgate Forwarding & Storage Co., Norfolk, Va., in its merchandise warehouses, however, has beaten even cheap labor with its installation of handling machinery—beaten it so definitely that no room for argument of the point remains.

This concern, which operates the Southgate Terminals, handles every class of merchandise, from "black strap" molasses in bulk and shiploads of tobacco to selected importations of tea. Its Norfolk storage plants are one two-story warehouse of about 50,000 square feet of floor space, and another two-story building about half that size.

It is preparing for business in Portsmouth, where two one-story warehouse buildings, each covering about five acres, and eight smaller sheds will be put in operation.

In the new development machinery will do practically all of the handling, while in the present operations machinery has been called into service to handle merchandise wherever there is room enough for the machine to operate.

The company provides terminals for the Pacific Mail Steamship Co.'s Norfolk connections, and operates its own vessels to Central America and adjacent countries. The handling of commodities on and off shipboard is under contract, and the company itself is not concerned with that phase of the work. It is concerned, however, with the merchandise on the pier, and its development of handling methods has been watched with interest by competitors.



At left, Revolvator at work piling 700-pound shipping cases in Norfolk warehouse of Southgate Forwarding & Storage Co. At right, Revolvator lifting 700-pound hogshead of tobacco for tiering in close quarters at Southgate plant; one operator does job which formerly required 4 to 8 men. In background of picture at right is C. M. Cherry, Southgate superintendent, whose experience has been that "handling machinery pays an enormous dividend wherever it can be fitted in"

A FORDSON industrial tractor is one of the latest additions to the handling equipment, along with an Automatic electric tractor which has a carrying capacity of 4,000 tons. The success with this equipment, which has 15 trailers, has been so pronounced that the Portsmouth warehouses will be equipped with Fordsons throughout.

G. W. Cherry, superintendent of the warehouses, has estimated that the tractors cut down his handling costs by 50 per cent for their phase of the work. Four men actually do the work formerly done by eight men with this machinery.

"In the Portsmouth plant," said Mr. Cherry, "where everything will be on the ground floor, the saving by the use of tractors will be considerably greater. We will use tractors there for everything from the fundamental propelling work to shifting freight cars on our own siding. We have already experimented with that end of the work."

The use of tractors has not eliminated 91 hand trucks in constant service, however, and a fleet of 20 four-wheel short-radius trucks which are essential in loading and unloading cars at the door. Manual labor is necessary in this feature of the handling operations.

The Southgate Company has cut down its labor costs in handling barreled

goods by exactly one-half through the operation of two electric barrel hoists. These require the services of four men each, whereas eight formerly were employed to do the same service. Mr. Cherry has estimated that the barrel hoists with four men actually do the same amount of work somewhat quicker than eight men could do it manually. The hoists are particularly effective with this concern because of its two-story buildings. The electricity necessary to operate the hoists is less, Mr. Cherry estimates, than the "juice" required to operate an elevator with the same carrying capacity. The hoists are operated on the circuit system, with continuous operation.

33 Per Cent Saving

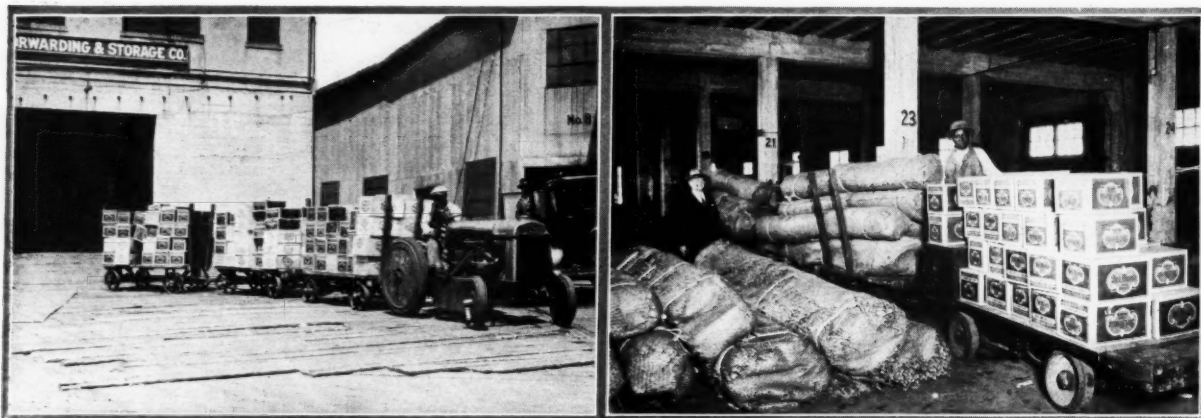
In handling hogsheads of tobacco, cotton bales and other heavy merchandise the labor costs formerly were approximately 25 cents a case. The company is operating now two Revolvators, one with 1500 pounds lifting capacity and the other lifting 3000 pounds. They are used in tiering tobacco and other heavy commodities, at a cost of about eight cents a case, or a saving of about 33 per cent.

When installed the machines were operated by hand, but later were electrified. The saving by the electric method, again, was pronounced over the manual method. In congested buildings, such as this company's warehouses have come to be, it would be practically impossible to handle the heavy commodities by hand, aside from the saving in labor by the machine method.

For loading merchandise on small boats, where gravity can be used, the Southgate Company employs a gravity conveyor, built in adjustable sections and portable. It is constructed to work at any angle, and a saving of 20 to 40 per cent has been effected by its use. It is used more largely for handling small package commodities.

Three sets of platform scales constitute another important feature of the company's equipment, and effect a considerable saving in time expended in weighing commodities on and off ship and car.

The Southgate operates a three-story shipping warehouse for goods on consignment, and maintains eight spiral chutes, without which a substantial increase in labor cost, according to Mr. Cherry, would occur. No definite estimate has been made of the difference in the manual and machine handling



At left, Fordson tractor hauling trailers with 4,500 pounds of package merchandise for storage purposes, at Southgate warehouse in Norfolk; driver and helper perform work ordinarily done by eight men. At right, automatic electric hauling tractor with three trailers loaded with imported bamboo poles, at a Southgate warehouse; formerly it required two men to handle each package, weighing from 300 to 500 pounds

cost here, because of the nature of the work.

Small case goods are handled through the chutes, and the saving in electricity, which would be used in the elevator under other conditions, is sufficient, according to Mr. Cherry, to justify the use of the chutes, regardless of the saving in labor.

Portsmouth Plans

Mr. Cherry is now perfecting a machine of his own which will unload merchandise from barges and other small boats with practical elimination of manual labor, except as a minimum requirement. It will be electrically operated, also, and will further revolutionize warehouse service if it operates with the success promised by preliminary tests.

"This is only the first stage of the handling equipment we will have," Mr. Cherry said. "In the Portsmouth plant, with ample room and one-story buildings, we will eliminate manual labor except where it is absolutely needed. Our experience in Norfolk has shown that handling machinery pays an enormous dividend wherever it can be fitted in. At Portsmouth we expect to have it in every operation where there is room for it."

Formerly the Southgate Company, which does the bulk of the molasses business in the port of Norfolk, handled molasses in barrels from ships to a very great extent, but now the business is handled largely in bulk, from ship to tank. In trans-shipment it is barreled, largely by machinery, stenciled by machine, stored by the electric barrel hoists, and virtually loaded by machinery. The bulk of the man-power seen in the Southgate warehouses and on the piers represents the operators of handling machines, or labor working under contract in serving ships.

"We adopted machinery in handling merchandise wherever we saw it would save operating costs," said Mr. Cherry. "We have found some conditions in

which machinery was not a money saver. There will always have to be some demand for manual labor. But our experience with the machinery we have is that the operating costs are cut anywhere from 25 to 50 per cent, and that is reason enough for substituting machines for men."

The Southgate development in Portsmouth, which is rapidly rounding into completion, will be one of the largest of its kind in the South. It represents the result of a character of operation which has come to be known in Norfolk as the "Southgate method," which is a synonym for the same sort of efficiency attributed to the manufacturer of a popular priced automobile of renown.

The Southgate operations embrace the Southgate Terminal, covering about three blocks with three-story brick wholesale concerns, many of which have already profited by the experience of the Southgate organization, which operates a part of the terminal, in its methods of handling its merchandise. Several wholesale concerns nearby operate small electric tractors, with small four-wheel trailers, for handling light merchandise and small package goods.

Tractors and Trailers

Tractors and trailers in the Southgate plant haul the bulk of the merchandise, big and small, from tobacco hogsheads all the way down the line. Hand trucks are employed in moving barreled goods, very largely, and similar packages to which such trucks are adapted peculiarly. They are not employed in places, or in handling merchandise, where tractors and their trailers can get in their work.

In the Portsmouth plant spiral chutes will be practically eliminated, because the entire operation will be on the ground floor. Hoisting machinery is not expected to be in full operation at the beginning, either, because of the available space. Electric conveyors and hauling machinery will feature the operations there. Quick dispatch handling

machinery—conveyors, power trucks, and similar devices, which now make the Southgate operations possible—will figure to a very great extent.

In handling ships' cargoes, which is a big feature of the Southgate work, quick dispatch is even more essential than in the general run of other operations. Machinery, according to Mr. Cherry, has made this possible, and has gone further, by making it decidedly less expensive while enabling the concern to fill its cargoes promptly and to eliminate expensive loading delays.

Third Neal Unit in Cleveland

The Neal Fireproof Storage Co., Cleveland, is planning to build an eight-story modern warehouse at 9800 Detroit Avenue. Adjoining New York Central and St. Louis Railroad tracks will give the plant private switching connections with all lines entering the city.

This West Side warehouse will make the third large unit, giving the company citywide facilities for storage and moving and improving its service for out-of-town shipments.

Designed by Christian, Schwartzberg & Gaede, the new plant will be of reinforced concrete construction, with facilities for private room storage, moving, packing and for merchandise storage if desired. It was announced in April that building operations would be started at once with a view to having the structure in use by the middle of the summer.

Bethlehem Building Started

Work has been begun on the new million-dollar storage plant of the Lehigh & New England Terminal Warehouse Co., Bethlehem, Pa., and the building is expected to be completed next spring. The warehouse will have 50,000 square feet of cold storage space and a household goods department. The architects are Moores & Dunford, Inc.

Labor Lightened and Handling Speeded by Machine at Crooks Terminal Warehouses

A Chicago Installation Described

By GEORGE F. PAUL

IN a great warehouse system extending for a length of nearly a quarter of a mile there is need for varied pieces of equipment that will lighten the labor and speed up the handling of freight. That is why the Crooks Terminal Warehouses in Chicago have come to depend to such a great extent on time and labor saving machines.

The Crooks company's main plant on

West Sixty-fifth Street is located on the Belt Railway of Chicago, which furnishes direct connection with fourteen trunk lines. The switch track has a capacity of about fifty cars and, as there are dozens of large doors along the loading platforms, the trip from the car to the warehouse or vice versa is simplified. There is available a total of about 250,000 square feet of space. About one-half

of this is in one-story buildings. The other half is in a three-story building and basement. All of this space is sprinkler protected. All of the buildings are served with solid concrete platforms about ten feet in width.

Included in the mechanical equipment are four Brown portable conveying machines. These are kept in almost constant use and stand up well in service.



At left Clark Duat industrial tractor hauling loaded trailers at a plant of the Crooks Terminal Warehouses, Chicago. At right, tractor of same type craning crated stoves and transporting them to freight cars, at a Crooks warehouse

Two economy lift machines are also quite necessary to help in saving space. For handling the heavy rolls of paper, the company has found the Norman trucks very practical, and for this reason owns several of them, as paper is one of the bulky commodities handled. There are also many two-wheeled hand trucks of the heavy type, both steel and wood, and these are found highly economical and practical.

In the downtown warehouse, at 417 West Harrison Street, are used principally flat trucks with roller bearings for handling goods on a floor space of about 75,000 square feet. In addition are operated three Packard trucks, of heavy capacity, which have their own garage.

One of the latest additions to the Crooks company's mechanical equipment is a Clark Duat, selected for one reason because it is one of the smallest industrial tractors produced. The small size is important, because it is little enough to make the turn inside of a freight car, and that is an important consideration. In spite of its diminutive size it has power enough to pull a total load of 15,000 pounds distributed on six trailers. The warehouses are laid out in such a way that it is seldom necessary to haul the loads more than 100 feet.

"We do not pay our truckers by the hour," says V. M. Kelly, the warehouse manager, "but we give them a flat rate per ton of material that they handle. I

realize that some warehousemen would consider such a plan as that impracticable, but it works all right with us. Of course, some materials are harder to handle than others, and then there is the difference in the length of the trips to be considered. We do our best to equalize the work among the gangs. We have found that this system has resulted in a decided increase in the tonnage that each man handles daily.

Twelve Trailers

"In connection with the Duat we operate such a number as we require of our dozen trailers. They are equipped with Hyatt roller bearings and carry loads of from 500 to 2500 pounds. The tractor-trailer combination works out all right. We have figured it out that the Duat with a train of four trailers would effect a saving of more than \$5 in handling a 35-ton carload of flour that had to be trucked about 500 feet to reach the desired car. Using this outfit the men did the entire job in one hour. The six men who did the loading and unloading would have been three hours in handling this carload of flour by the old truck methods.

"We find the Duat handy also for moving automobiles. Just now we haven't very many of them in storage, but we have had hundreds of them. And it's quite a task to fill them with oil, gasoline and water and start the engines.

This machine saved us all of that trouble. For handling heavy loads, such as lathes or clam-shell buckets, it is often convenient. We make a good many less-than-carload shipments. Often these involve long hauls, but with this outfit we can do the job in a hurry by putting two or three men on the pile, one man on the tractor and one on the trailers. A man would have to make thirty trips with a hand truck to load 30 barrels weighing 300 pounds each, but this outfit, using five trailers, moves all of them in a couple of trips.

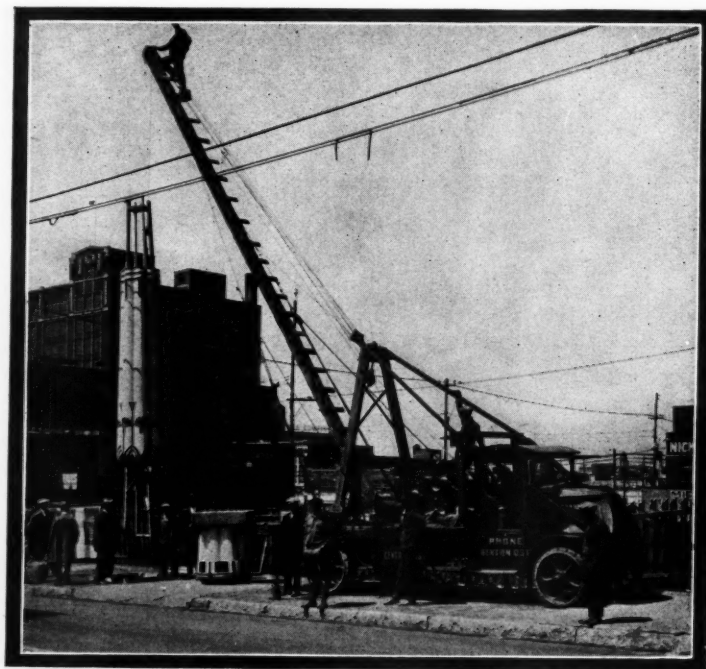
"We often find need for some special equipment to handle a certain big shipment, but we do not find it practical to buy too many machines, for the business varies. For instance, we may have a big run on sisal and then we wish we had a machine especially designed for handling it quickly, and then again we might run along for weeks and not have any of it to load or unload. In that case our special equipment has become a dead loss. If bags and barrels and boxes and all other containers were uniform in size and shape, the matter of handling them would be simplified. It would also help a great deal if the roofs could be lifted right off of freight cars. Maybe some genius will figure out such a roof as that for us. Any improvement or piece of equipment that will trim down the time of handling shipments will be warmly welcomed."

Rebuilt Trucks Equipped with Hoists Expedite Handling for Centropolis Co. of Kansas City

By BEN S. BROWN

THE Centropolis Transfer Co., Kansas City, Mo., has instituted an innovation in hauling service that has excited the imagination of local warehouse and transfermen and which suggests wide possibilities for their purposes. It is a hoisting apparatus mounted on a truck. Already the device has been brought into service in household goods moving, and also in service in an unusual way for a fellow transfer company operator.

The Centropolis company, operating seven motor trucks, has gradually developed heavy hauling, and also machinery moving. In its work derricks were often needed. It devised some time ago a derrick which, mounted on a truck, could easily be removed so that the truck could be used for hauling. Subsequently the company equipped another truck with hoisting machinery. The first truck, equipped with removable power winch operated by the truck motor, the hoist being of 5,000 pound capacity, is a 3½-ton Mack. The second truck, with its permanent hoisting equipment, is a 5-ton Mack. The truck bed of the latter was rebuilt and strengthened for the



5-ton Mack truck with rebuilt and strengthened bed and equipped with 2-drum hoist and 40-foot wood beam. This special machine has been used by the Centropolis Transfer Co., Kansas City, to swing heavy commodities.

hoisting equipment, a two-drum hoist engine fixed to the bed, frames provided for the pulleys of the hoist, and both steel and wooden beams provided.

While the two trucks with hoisting equipment are kept busy on steel erection, boiler and tank setting, and similar heavy work, they are occasionally called upon for work in other lines.

One of the first operations given the smaller hoist truck was the swinging of a piano to a second-story window, in a household moving job where narrow doors and stairways made moving by "hand power" impracticable. The window sash was removed from the second story-window, and the hoist lifted the piano from the truck on which it had been brought to the house, to this window, where it was taken by men and placed in its position, within two or three minutes.

The same smaller hoist truck has been used on numerous occasions to handle heavy articles from cars, usually to other trucks that transport them.

The larger truck, the hoist having a capacity of six tons, was given an interesting task recently. A truck loaded with household goods had slipped into a ditch, where it was balanced precariously. The hoist truck lifted the loaded truck bodily out of the ditch and set it down on the paved street, ready to move off.

The great efficiency of the truck-mounted hoist was demonstrated during the Shrine convention in Kansas City, its use at that time indicating its possibilities as a time saver and an economy factor. The Shrine committees had provided 100 totem poles, of plaster on a wooden framework, to be set up on street corners. Contractors figuring on the transportation and setting estimated the job at around \$1,500. The Centropolis company did the job for slightly more than \$500, on a time basis, and made money on it. The reason for the saving was the rapidity with which the hoisting apparatus could get to the erecting point and be put into action there. The big

hoist truck ran up on the sidewalks, arriving at the same time as the truck and trailer hauling the posts. It lifted the posts from the truck and set them down in permanent position. There were two lifts for each post, one for the column and one for its cap, a man being lifted by the hoist to the top of the column to cement the cap into place. Traffic was not obstructed; and even if there had been any interference with traffic, it would have been for only a few minutes. The actual use of the truck, trailer and hoisting apparatus at each setting was perhaps five minutes, the rest of the average of 15 minutes per post being consumed in the nailing of the columns to pedestals by other groups of workmen.

The large, permanent hoist truck represents an investment of about \$10,000, according to H. L. Pettyjohn, manager of the Centropolis Transfer Co. Work taken on a time basis provides for the truck and hoist, and two men, at \$7.50 an hour.

Bekins Lift Vans on Pacific Coast Reduce Furniture Shipment Losses

EXCELLENT use is being made of steel lift vans by a San Francisco firm for shipping household goods—the Bekins Van & Storage Co.

These lift vans are immense packing cases substantially constructed and braced. The household goods are loaded in the vans in very much the same manner that they would be loaded in a truck for ordinary moving. It is not necessary to pack and crate the goods, as is required by the ordinary rail or boat methods. The vans are locked and sealed in the presence of the owner of the goods,

then hauled directly to the railroad yards and placed on a waiting flatcar. Then they are shipped and they are not unsealed until they reach the residence at the destination.

Pieces of furniture are protected with a liberal supply of pads and quilts.

Three of these lift vans form the capacity of the average flatcar. The average contents of an ordinary six-room house can be stored in one of the lift vans.

These vans are being used extensively on the Pacific Coast between Los Ange-

les, San Francisco, Oakland, Portland, Seattle and Vancouver. They have been used also for inter-coastal shipments from California to New York City and for some shipments to European points.

It has been found that the service works out in a satisfactory manner. It has eliminated a considerable amount of the handling of furniture, which means the trimming down of wear and tear and damage. In a great many instances it is more economical to ship by this method.



At left, Bekins lift vans, loaded, being swung to a waiting flatcar. At right, goods being placed in one of the lift vans

Tunneling Through High Rates

How Chicago's Underground Freight System Operates

By W. J. GAVIN

Traffic Manager, Chicago Warehouse & Terminal Co.

CHICAGO, city of subway desires, has had a tunnel system of transportation of a specialized nature for the past eighteen years. Forty feet under the congested streets of the city are more than sixty miles of tunnels, all equipped with tracks and trolleys used in carrying freight to and from stations in the loop. Comparatively few of the residents of America's second largest city know the full scope of our work. They push their way through the throngs of shoppers who infest State and Madison Streets, oblivious of the fact that they are literally tramping upon an intricate network of underground conveyances.

THE Chicago Tunnel Co. has been in working operation since 1907. Work was begun on the tunnels in 1900. Fully \$40,000,000 was put into the construction of the project, which was a comparatively new thing in this part of the country. The first Boston Subway, begun in 1894, was an underground tunnel for the surface electric lines entering the business district of the city. The original New York passenger subway, as contracted for in 1899, comprised some 20½ miles of line, three-fourths of which is in tunnel. New York has later enlarged its tunnel system.

At the present time we have on the tracks in Chicago 132 electric locomotives of 30 to 50 horsepower each, and 3000 freight cars of various classes, each four feet wide and about ten feet long. Each car will carry from one to six tons of merchandise. The tunnels extend under nearly every street in the Loop and under many miles of streets outside of that district. Their starting points are four universal freight stations conveniently situated for shippers, and their terminals are the twenty-five railroad freight depots.

Many large business houses have private connections with the tunnel. The Boston Store, Carson Pirie Scott & Co., John V. Farwell Co., Mandel Brothers and numerous others find the tunnels to be an indispensable part of their shipping facilities.

Use of the tunnels is not, however, confined to big companies. Small manufacturers and houses with limited warehouse space have found that they can keep their floors clear by using the Chicago tunnel freight stations. Their shipments are not allowed to accumulate in their own warehouses, and are quickly hauled to the nearest universal freight

Any one who has tried to drive a huge truck or even a Ford car through the crowded streets in the vicinity of the large department stores knows what a well-nigh impossible feat it is. Picture a mammoth truck starting out with merchandise. There are a dozen and one different ways in which it may be held up on the way. Bridges may open; delays take place at almost every street crossing along with other traffic, followed by another wait at the railroad depots. After making deliveries to only a few of the stations the time is too short for the driver to complete his work, and so he is compelled to return to the warehouse and start out again on the following morning.

CHICAGO'S public warehouses work in cooperation with the underground freight subway system here described by Mr. Gavin.

If Marshall Fields desires to ship its goods out of the city, it puts its goods, at its own private tunnel entrance, on an underground train.

If a mercantile company does not have such a private entrance, it sends its goods to the nearest storage building of the Chicago Warehouse & Terminal Co. There the goods are loaded on trains and transported underground either to a public warehouse for storage or to a freight station for shipment.

station, where there is ample space. These houses operate fewer trucks than they would have to use to deliver shipments direct to the many railroad depots, situated as they are in various parts of Chicago.

Quantity is no item, as the man with a small amount of freight is taken care of along with others just as speedily as though he were transporting several tons.

The use of the tunnel freight stations enables shippers to consolidate their shipping to one point instead of sending light loads to the several railroads, or peddling them from one railroad station to another. They can also pick up at a tunnel freight station all of their inbound freight arriving at the various railroads instead of calling at each railroad for small lots of freight.

It has always been the aim of the

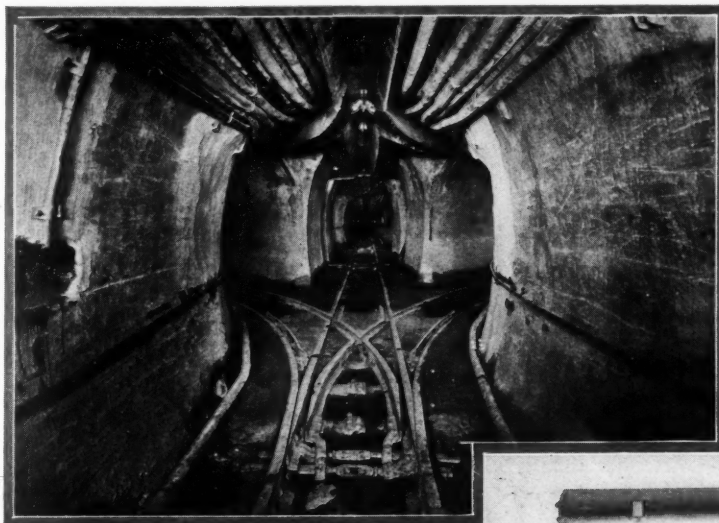
company to serve its public just as cheaply and efficiently as modern needs and appliances would permit. At the present time the shipper pays two and one-half cents for each hundred pounds shipped by way of the tunnel, a charge which is many times absorbed by the saving to him in cartage.

Hundreds of thousands of yards of excavated earth, refuse and ashes have been hauled through the tunnel to the water's edge and there made to push back the inroads of mighty Lake Michigan and to form the foundation of Grant Park and the Field Museum. Building materials of all kinds, coal, cinders—all of these bulky necessities of modern initiative are transported back and forth through the tunnel cars.

The goods and materials transported through the tunnels last year would have increased the number of wagons on the streets moving to and from railroads just one-third had they been carried on the surface instead of under it.

The clean, fresh air, constant, moderate temperature, and absence of rains, insure the arrival of all freight at its destination in as good a condition as when it starts its rapid transit under the city. This is a factor which makes tunnel transportation particularly advantageous for perishable or refrigerated goods, such as fruits, butter, eggs and poultry. As compared with wagon haulage on the surface, with its dust and extremes of heat and cold, freight of this kind is certain to reach its destination in a much cleaner and fresher state when carried through the tunnels. By means of an elaborate pumping and drainage system, the tunnels are kept at all times perfectly dry. A ventilating system insures cleaner and purer air than that on the streets above. In win-

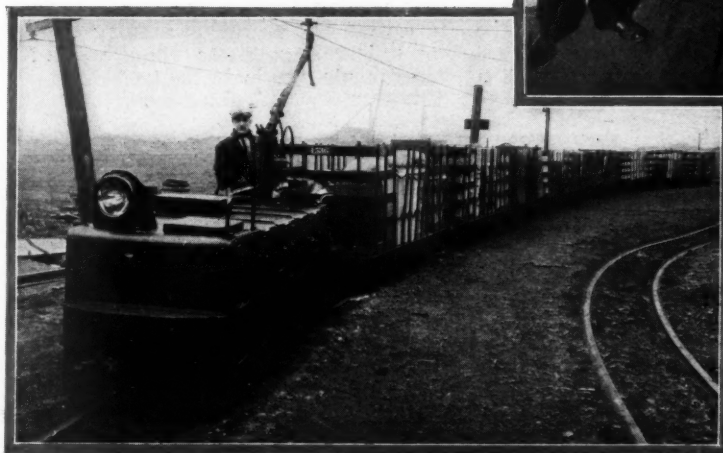
Below, freight being placed in cars in shipping room and wheeled to elevator



To left, a typical view of the Chicago freight tunnel, showing trolley and track switches



To right, a tunnel train outdoors having a picture taken



Above, freight and elevator shaft showing a loaded car received from a commercial house and about to be lowered into tunnel for delivery to railroad

ter and summer alike an equitable temperature of 55 degrees is maintained.

Block signals provide against accidents and insure rapid operation of trains, with absence of confusion and delay. Operation of traffic is controlled by a dispatcher, who keeps constantly in touch by telephone with the movements of trains.

There are about 500 to 600 movements in ten hours. The cars loaded with freight at different connections are made up into trains for different directions, the cars being placed in the proper order in the train for most rapid delivery. Locomotives are sent to the connections as the dispatcher is advised that cars are ready for movement. On arrival of

the cars at their destination they are placed on an electric elevator and raised to the floor of the connection, being delivered under cover and protected from the weather. At each of these elevators a man is stationed to receive the cars, operate the elevator and advise the dispatcher of the needs of the connection in the way of cars or other service.

In constructing the tunnel the blue clay was cut out with steel knives operated by hand. The tunnels are made twelve inches larger all around than the completed bore and have a twelve-inch wall of solid concrete rammed in between the forms and the earth under heavy air pressure, so that there is no chance of cave-in or settling which might disturb the foundations of the neighboring buildings. So successful has been that method of construction that no buildings have ever shown any ill effects of the presence of the labyrinth of tunnels at their foundations.

The four universal freight stations or public receiving stations are all located

outside of the congested Loop district, but one or more of them is convenient from any point in or near the Loop. One is at 751 W. Quincy Street, serving the territory west of the Chicago river; another is at Kingsbury north of Grand Avenue, serving the wholesale district in the northern part of the business section and the territory north and east of the Chicago River; a third is at Seneca and North Water Streets, serving approximately the same territory, and the fourth is at Canal and Roosevelt Road, serving the territory south and west of the Loop district.

Thus like a great rope the tunnels embrace the city, coordinating its parts

with, as its ultimate result, a city that functions better and works faster.

The proposed passenger subway would not interfere in any way with our freight system, as such structures are never more than twenty feet below the surface. If it were dug any deeper than this, the time gained in rapid transit would be absorbed in elevator service. We would welcome this means of bringing people back and forth from the Loop more speedily, because we are convinced that underground systems of transportation are the solution of large city congestion, and only as we may devise ways of clearing the streets can we have a cessation of metropolitan disorder.

Paper Is Stored by Machinery at Cole Warehouse in Providence

By J. E. BULLARD

PERHAPS the most interesting warehouse material handling problem in Providence, R. I., is one which the Cole Teaming Warehouse Co. has solved in such a manner as to improve its service and save considerable labor. At its storage building No. 1, located at 233 West Exchange Street, it warehouses the newsprint paper for the Providence Journal Co. This paper arrives by carloads and is trucked to the newspaper plant as it is needed.

The paper is in rolls of three different lengths. Those classed as half-length each weighs 500 pounds on the average, the three-quarter length each about 800 pounds, and the full length each from 1200 to 1250 pounds. The paper is rolled on a metal cylinder and the rolls are wrapped with heavy paper, but their weight makes it a

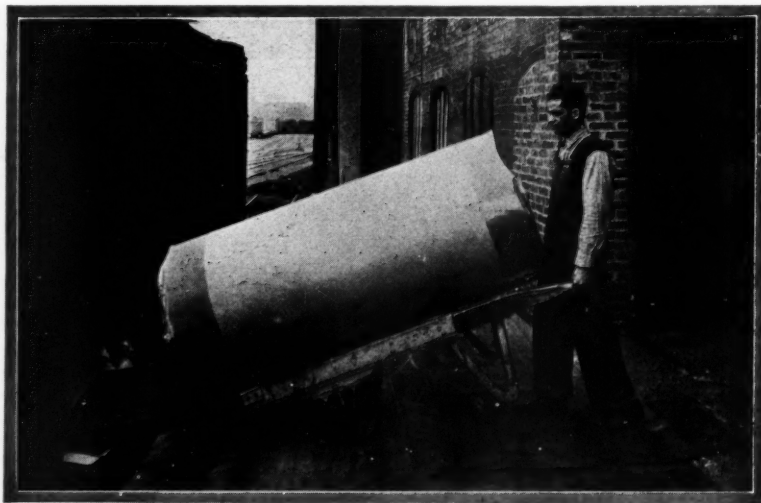
very easy matter to damage the paper to a considerable degree. Accordingly, special equipment has to be used in handling it.

The paper is trucked in the warehouse on Norman paper trucks which Earl M. Medbery, the manager of the company, states have a number of special advantages. For one thing, the ball-bearing wheels and the manner in which the trucks are balanced enable one man to handle a roll it might require two or more to handle with an ordinary truck. As the wheel positions are adjustable to the different lengths of rolls, the truck can be set for the length being handled, the truck operator does not have to expend any energy in keeping the roll balanced, and the ball bearings in the wheels reduced to the minimum force required to move the load.

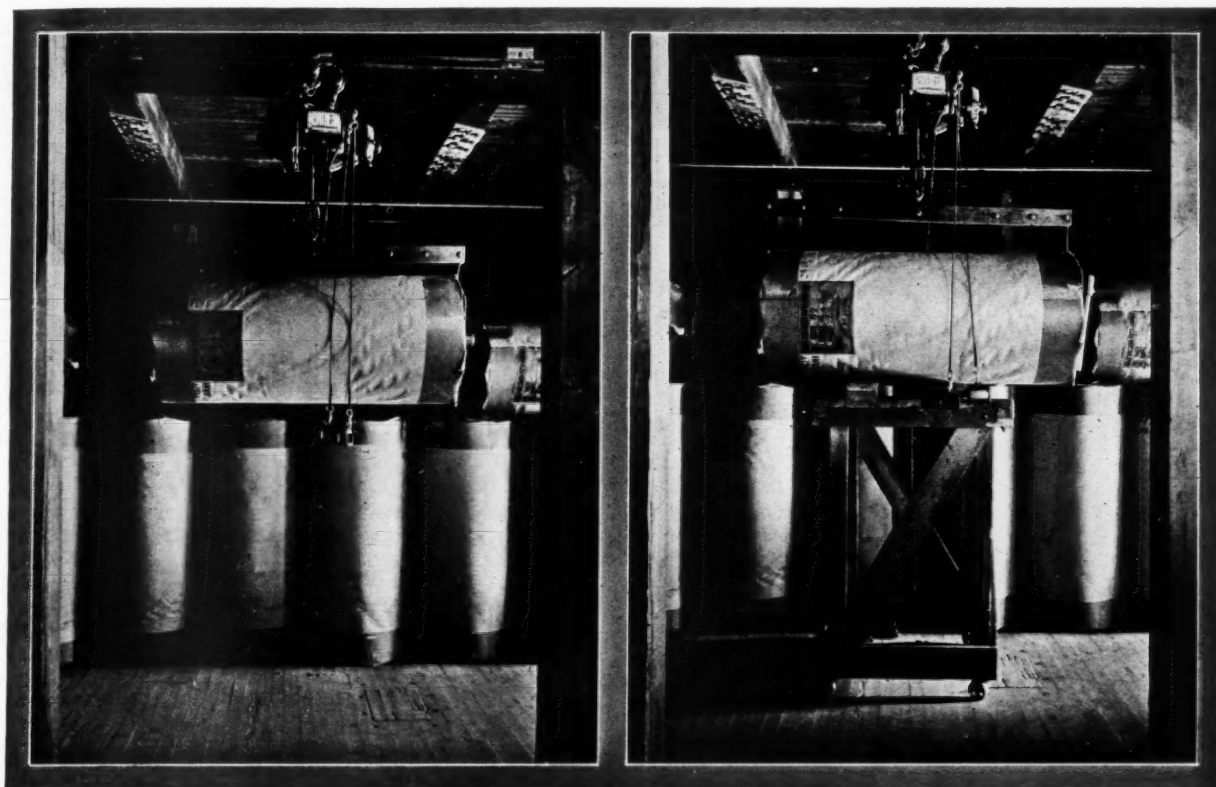
THESE trucks are used to transfer the rolls from the freight cars to the hoist and from the hoist to the trucks. The hoist arrangement is partly a device designed at the warehouse. Two floors are used for paper storage. The lower floor is on a level with the floors of the freight cars at the siding. The upper floor is on a level with the bodies of the trucks used in transporting the paper from the warehouse to the newspaper plant. By means of doors in the upper floor the same hoist is made to do duty on both floors.

The floor area used for paper storage is covered with rolls placed on end before any stacking is done. On top of these rolls others are rolled and stored in a horizontal position. For the purpose of elevating the rolls stored on top of the others, the special hoisting equipment is used.

A one-ton Northern Engineering Works electric hoist, running on rails extending the full length of the ceiling of the upper floor used for paper stor-



With this truck one man handles easily a 1,200-lb. roll of paper at Cole Teaming Warehouse Co. plant, Providence



At left, roll of paper suspended from overhead movable platform ready to place on top of rolls already standing on end, at plant of Cole Teaming Warehouse Co., Providence, R. I. At right, Revolvator raising roll of paper at Cole warehouse

age, supplies all the power necessary.

The device used for attaching this hoist quickly and securely to the rolls is of local design. It consists of two pieces of iron about three inches wide and a half inch thick and a little longer than the length of the longest rolls. These are fastened together by three rivets at each end which pass through bushings holding the two pieces far enough apart to permit of hooking specially-made hooks over the bushings. The distance between the rivets farthest from the ends is such that when the hooks are placed over the bushings which these rivets support they just clear the ends of the shortest rolls. The next pair of rivets is properly spaced for the medium-length rolls, and the pair of rivets nearest the ends is spaced the right distance for handling the longest rolls.

At the center of this double bar there is a hook which attaches to the hoist. The lower ends of the hook are attached to rings made of strap iron through which run pieces of pipe. This pipe is of just the size to fit inside the metal cylinder on which the paper is rolled. The pieces extend in about 18 inches and are prevented from being pushed in too far or slipping through the rings holding them by a coupling on the outer end of each pipe.

When the paper is to be hoisted, the truck on which it is brought to the

point is rested on its feet and wheels so the roll lies in a horizontal position. It is then only a matter of seconds to bring the hoist into the proper position above it, lower away, push the pieces of pipe into each end of the roll, and hoist it to the desired position.

It has not proved practical to hoist the paper directly onto the tops of the rolls already stored. One reason is that such a practice would almost certainly result in considerable injury to the front row or rolls. Another is that, as space must be left to pull the pipe out of the ends of the roll, it would not be possible to stack the rolls close together. Accordingly, wooden platforms provided with wood rails on the top which come at exactly the level of the top of the stacked rolls, and which have wheels on each of the four supporting legs to make them easily moved, are used for taking the rolls from the hoist.

Expedites Storing

The platform is placed in just the position where the roll is to be stored, the roll hoisted to the top of the platform and then rolled by men into place. It requires four men to handle one of the larger rolls after it has been elevated by the hoist.

This hoisting device, Mr. Medbery has found, expedites the storing and the delivery of paper to a marked degree

and prevents any injury to the paper. The device is so carefully balanced that, when a roll is hanging free in it, the position assumed is almost exactly horizontal. It is supported in the air in very much the same manner that it is supported when on the printing press, and the spreader part of the device prevents any injury to the ends of the roll while it is being raised or lowered.

It is estimated that between the use of the Norman trucks and the hoisting equipment something like 50 per cent of the labor cost that would be required without them is saved, and the damage done to the paper is reduced to practically zero.

In the handling of the general merchandise, hoists, chutes, conveyors or the like have not been found to be entirely practical due to the constant change in the class of goods that must be handled. The merchandise that is warehoused passes quite rapidly through the building. For the handling of small packages three-wheeled transveyors are used and some of the merchandise does not have to be removed from the platforms used on the transveyors; for, before it is stacked away, it is taken on the elevator to the delivery floor and shipped away to the retailer in trucks.

Conveyors, Chutes, Tray Elevators

Reduce Radial's Handling Costs

Here Is a System Which Serves All Floors of a Warehouse

By BEN S. BROWN

IN this day of extensive and costly machine equipment for the partial elimination of expenses entailed in handling boxes, bales, bags and so on, a larger initial investment is a prerequisite to the upbuilding of a modern, successful warehouse. But the use of such handling machinery assures greater speed in loading and unloading goods with much less manual labor and, consequently, effecting an enormous saving in ordinary operating costs. The World War was, through necessity, originally responsible for the efficient development

of much of the modern machinery. The great war is now history, but the labor saving machinery still is considered necessary, its use increasing steadily throughout the country. Its feasibility has been amply proved through that forced experimentation during war time.

The new plant of the Radial Warehouse Co., Kansas City, Mo., is a good example of what a modern storage plant should be to insure profitable and efficient operation.

THE Radial plant is at Armour Road and Charlotte Street, North Kansas City, in a district which is occupied also by several large manufacturing companies, branch factories, grain and feed mills. It is a substantially built structure, of reinforced concrete, flat slab and column construction.

The building itself, 287 feet long by 113 feet wide affords more than 120,000 square feet of available floor space. The front and side walls are faced with vitrified brick, and there are 100 windows, each 5 feet by 10 feet, on each of the four floors. On the first floor there are five doors, each 14 feet by 14 feet, which open onto the company's private switch siding.

All floors are served by two freight elevators, in addition to a conveyor system. Both elevators are electrically driven, the largest being 25 feet long and 12 feet 4 inches wide and having a capacity of 20 tons. Loaded trucks of any size may be driven directly onto the larger elevator and transported to the upper floors for unloading. The smaller elevator is electrically driven, and is capable of carrying packages up to 500 pounds each.

An All-Floor Service

The conveyor system, which was installed by the Standard Conveyor Co., North St. Paul, Minn., serves all floors and is conveniently situated so that goods may be moved quickly and with a minimum amount of handling by man power. Conveyors are driven by electric motors of from 2 horsepower to 7 horsepower

each, and are of the endless belt type.

In unloading goods from freight cars on the first floor, a Standard portable conveyor, which is wheeled into the car, transports the bags or packages directly from the car to a conveyor belt, which carries them forward to the chain-type elevator. Upon being dumped from the conveyor on the first floor, goods are placed on the elevator by two men and are carried to the upper floors at the rate of 75 feet a minute and are dropped into a chute which delivers them to another conveyor. All conveyors are equipped with diverting chutes, allowing goods to be delivered from conveyor to piler on either side of the building. The diverters are placed at intervals along the entire length of the conveyors.

Three Handlings into Storage

Thus goods being shipped into storage are handled only three times by human hands: In the car, when placed upon the piler; on the first floor, when placed upon the elevator, and on the floor of delivery, when arranged on the pile as delivered from the piling machine.

Articles may be moved from an upper floor to any lower floor in two operations. They have only to be thrown upon the piling machine (which has been turned around toward the conveyor) and arrive upon the conveyor, which carries them to the spiral chute serving all floors. The chute is so arranged that goods may be cut off and delivered at any floor.

The elevator, which is of tray type, self-contained, enables this warehouse

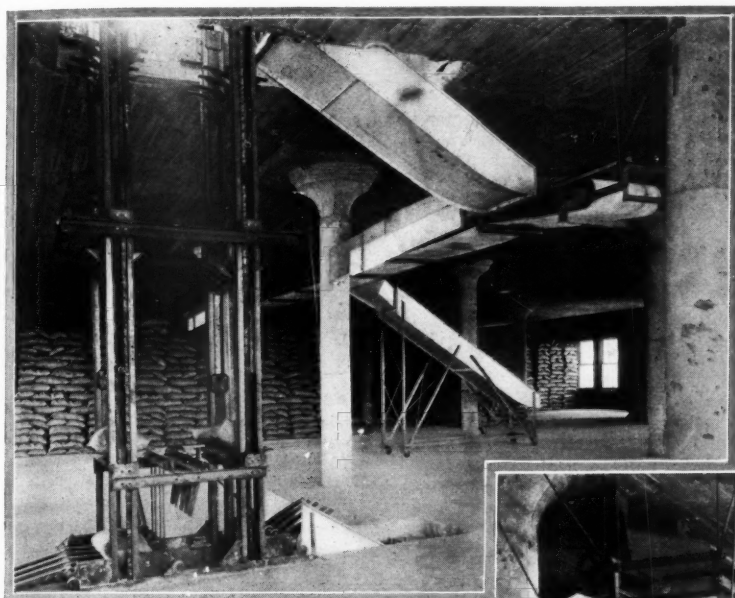
to handle as many as 25,000 bags a day from the cars and, as there is practically no lost time in the various operations, the entire number of bags unloaded will also have been properly piled on the same day received.

All conveyor belts travel at a speed of from 135 feet to 150 feet a minute, insuring that every tray of the elevator shall be kept loaded. Although the average package weight of articles handled by this company is 100 to 140 pounds, the elevator is capable of carrying packages of 500 pounds each.

In loading cars on the siding, packages are sent down the spiral chute to the first floor, where they may be placed directly upon a short conveyor and thus delivered to the unloading conveyor. The latter conveyor, which is installed just below that which transfers incoming articles to the tray elevator, is also equipped with five diverting chutes, one for each of the large side doors of the building, allowing the goods to be dropped off into any car on the siding. In this manner a car may be loaded at the same time when other cars on the siding are being unloaded, with no interference retarding either operation.

Minimizing Drayage

The Radial company has two sidings, allowing space for 25 cars at one time. These sidings have direct connections with the Wabash, the Rock Island and the Burlington railroads the Kansas City Terminal Railways furnishing three switchings each day. The Terminal company switches cars to the warehouse at



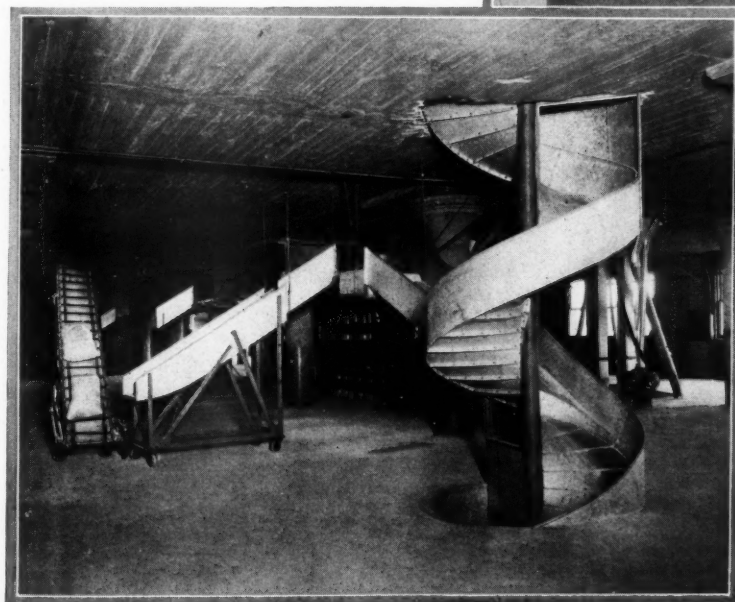
Above, scene at fourth floor of Radial warehouse, showing tray elevator, a chute leading to a belt conveyor, and a diverting chute in the right background

7 a. m., 12 m. and at 5 p. m., and, through an arrangement with the switching company, the warehouse is able to receive goods over any railroad entering Kansas City.

Heretofore the question of draying less than carload lots from the warehouse to individual, or central, freight stations,



Above, scene at first floor of Radial warehouse showing two conveyors. Lower one leads from unloading door, extreme rear, to tray elevator piling machine which, in right foreground, is in position to load lower conveyor. At second door, right, toward background, is chute connecting upper conveyor



Scene at second story of Radial warehouse. Here is shown spiral chute between floors. At left center is a diverting chute operating from a conveyor to the piling machine at the extreme left

and the consequent charge for that service, has presented an expensive problem to consignor and warehouse alike. But there is a central freight station adjacent to the Radial company's warehouse and, through a special arrangement, the company is able practically to eliminate drayage of L. C. L. shipments to out of town points. The arrangement enables the warehouse company to load a trap car of shipments going out over several railroad lines, the minimum on the entire lot being 6000 pounds, and have the car handled at a universal freight station which accepts freight for all the lines running out of the city. This has proved to be another way of eliminating much expense.

Included in the equipment of the Radial warehouse is a complete flour blending plant with a capacity of 6000 barrels a day. In connection with the

blender are eight packers, which automatically pack bags and packages of a certain size, and a bag sewing machine. The packing equipment is on the second floor of the building, from which a special chute is installed exclusively for flour bags being sent to the ground floor for shipment.

On the second floor, at the front of the building, is a large laboratory, which was installed at a cost of more than \$5,000, and is one of the most complete laboratories in the city. It is used in testing goods in storage to find the increase, or decrease, in moisture content, and in making analyses of grain, flour and the like, both for the warehouse company and for any other organizations which may have use for such service.

Lift Trucks, Telescopers and Hoists Cut Costs in Boston Warehouses

How Portable Machinery Is Constantly Used in Piling Goods

By S. F. HOLLAND

AMONG the many labor saving devices for the expeditious handling of merchandise in public warehouses two types in particular, which stand out from all the others because of the service they render for the Quincy Market Cold Storage & Warehouse Co., Boston, are being used daily in the Charles River Stores, Albany Terminal Stores and Summer Street Stores, three of the Quincy Market company's plants.

The types are, first, lifting trucks, and, second, piling or telescoping machines. Each has more than paid for its cost, through the saving of time and labor entailed in receiving, storing and delivering commodities.

The operation of these machines at the three buildings is about the same. At the Charles River Stores, George H. Lovejoy, the superintendent, commenting in connection with a demonstration of both the types, said:

"At the Charles River Stores we have 400 or 500 platforms and three list trucks. They have about the same number at each of the other two stores. The platforms are built about a foot high and are used to pile goods upon; this keeps the merchandise from the floors and gives us opportunity to combat vermin that might come into the buildings, as well as a chance to clean the floors without damage to the goods stored.

Saving 25 Per Cent

"In the constant handling of this merchandise from the teams or cars we use the platforms. One man can keep these platforms loaded as fast as the lift trucks can carry the goods to the floor to be put away. Take, for instance, canned goods. We load about 48 cases (50 pounds to the case) to a platform and deliver into floor, placing the platform on floor where desired, and use this first load for our bottom and fill in extra bottoms as needed in the same manner, thereby saving a double handling on these bottom loads. But in topping off these piles cases require another handling.

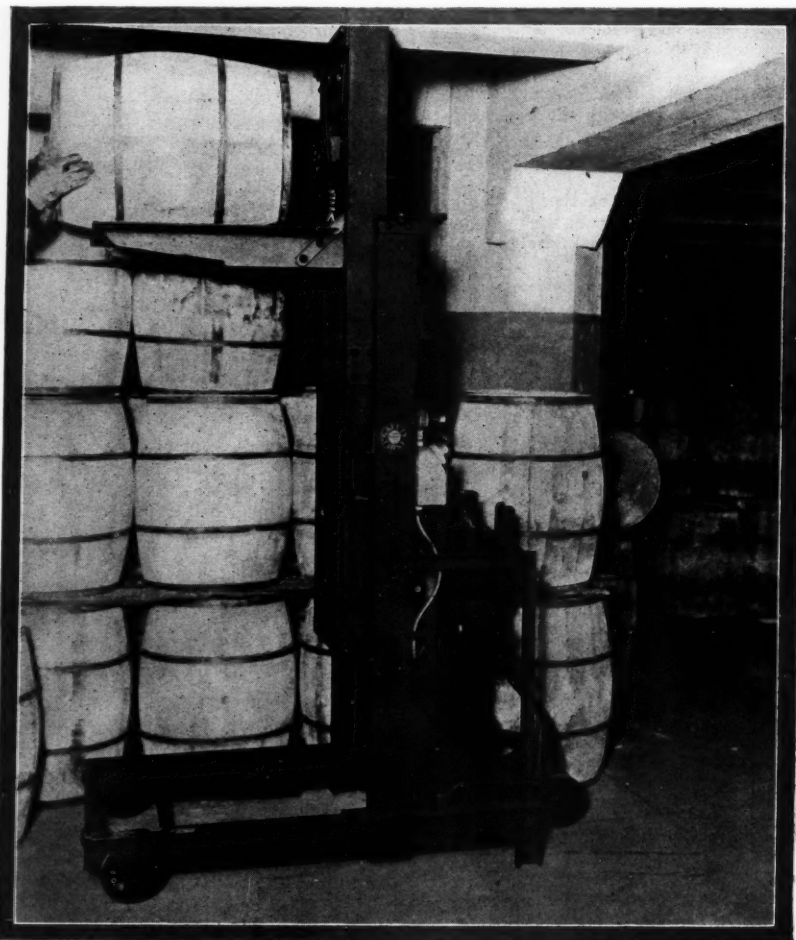
"We find, in keeping costs on this handling, that we make a saving of about 25 per cent. We use also six-wheel platform trucks to good advantage on de-

livering but, of course, we cannot use these trucks for bottoms.

"In making deliveries, when it comes to trucking out the last of the goods after the tops have been removed the lift truck is backed under the platform and the load is taken out and delivered without extra handling.

"Also in delivering goods to teamster

there is more or less delay in making the delivery while the teamster loads and counts his packages. Our experience has been that with this platform delivered to the tail-board of the wagon, the teamster has the opportunity of counting his load on the platform and signing to the warehouse clerk for the goods, which allows the clerk to attend to another customer,



Type of piling machine or telescoper used at plants of Quincy Market Cold Storage & Warehouse Co., Boston

and this speeds up delivery and makes for better service."

The Telescope

"The piling machines, we find, are labor saving devices and save from two to three men to a gang. Our company is very generous in allowing the installation of these machines as it saves a lot of hard, laborious work and also makes for labor economy. The piling machine that has worked most successfully for us is what is called a telescope. This machine is motor-driven and stands about six feet high, which allows the machine to pass from off our elevators into the different floors without breaking the frame in halves to allow the machine to pass the doors.

"The telescope frame is built about six feet high, as explained, and then there is another frame (which fits inside of this outside frame) about four feet high. The package is put on the platform and lifted to the top of the six-foot frame and the platform comes in contact with the second frame and lifts up the balance of the way. This plat-

form may be stopped at any point desired.

"We find this machine handy in moving around from floor to floor, and it saves time in handling. We break goods down with this machine as well as pile with it. For electric power for running these machines we plug into our lighting sockets on the floor we are working on and thus no extra installation is required to take care of it."

Crane Hoists

At the Terminal Wharf & Railroad Warehouse Co.'s plant in the Charlestown district of Boston, the portable crane hoist has supplanted the donkey engine. To quote Samuel G. Spear, treasurer of the Terminal company:

"The day of the old donkey hoisting engine with its constant fire hazard is gone in most public warehouses. Donkey engines were all right for the handling of the heavy, cumbersome merchandise in their day, but that day has long since passed. The 10-hp. portable crane hoist has it all over the old donkey engine.

"In the first place only about half of

the number of men is required to manipulate the portable crane hoist, as compared with the labor necessary to operate the old donkey engine. In the next place the portable crane hoist can be more easily moved from place to place than the old donkey engine. Then the crane hoist is more adjustable and with facility can come closer to the goods to be handled. It was always a difficult proposition to place the old donkey engine in convenient relation to the work. This is not so with the portable hoist.

"We have now a battery of seven of these portable crane hoists. They are used for storing and piling, in high studied buildings, heavy materials such as raw sugar, Egyptian or American cotton of 1000-lb. bales, or South American wool—all to a height of 25 ft.

"The first year that we used the portable crane hoists we bought only four of them and, with all the incidental wiring necessary for their use, they paid for themselves in that one year, because of the saving in handling raw sugar alone. Since then we purchased the other three, for the handling of other merchandise."

All-Around Equipment in Furniture Storage House Speeds the Handling of Household Goods

By K. H. LANSING

BUELL G. MILLER, of the Miller North Broad Storage Co., Philadelphia, chairman of the American Warehousemen's Association's committee on tools and appliances, has in his business a notable selection of such devices identified more or less directly with household goods warehousing and making for speed and efficiency.

For instance, in the bookkeeping department of the main warehouse, at 2715 North Broad Street, there was recently installed a calculating machine which is proving a valuable acquisition for saving time and work in the compilation of comparative monthly financial statements, giving at once mechanically the percentage that each item of expense or sale bears to gross sales.

In these operations the machine performs in one hour the work which formerly it took from one to two entire days to do by hand. Furthermore, the machine is used for striking trial balances. The operator can lay the ledger beside the machine and add, total, turn a crank handle on the right hand side of the device and obtain the result in a jiffy.

The machine is equipped with numbered keys, like those of an ordinary adding machine. The keys corresponding to the numbers to be multiplied are pressed down, locking them in position. The crank handle is turned at each unit and indicators above the keys, at the further end of the machine, show what

the result must be and whether the work is being done right.

The device is employed also in making up the weekly statement of hauling costs. The gross earnings of each moving van, or truck, for each week are taken, as are the wages of each man on the vehicle, to obtain the percentage that wages bear to sales. The percentage of costs also is quickly obtained, enabling the operator to know in detail whether each operation is profitable. In this department there is also a well known standard, time-saving bookkeeping machine in the operation of which cards, instead of sheets, or leaves, are used.

In the company's well equipped garage repair and servicing shop are numerous machines calculated to keep the household goods moving vans on the road in the best possible operating condition.

Proper operation and maintenance of vans is here recognized as one of the major means of success, and the equipment is such that the shop force is as self-reliant as possible and there is little need for any outside machine work, thus obviating annoying delays.

There are eighteen vans, three heavy-duty tractors and five trailers. All bodies are built on the premises by experts and the painting also is done here. Four of the trailers have inclosed bodies and one has a stake body. On one of the tractors has been mounted a capstan head, for use with the stake-body trailer,

the capstan being especially useful in loading or unloading extremely heavy articles.

The company keeps two extra bodies on hand for the trailers. Four men in the wood-working shop are kept busy all the time. The company builds its tractor cabs to accommodate eight men. A sleeping berth which is, in effect, a hinged, folding bench with folding legs, is built on the back wall of the tractor cab. It makes a commodious bed in connection with the regular seat and a couple of furniture pads.

There is a combination, motor-driven wood-working machine, embodying in a single device a rip saw, cross-cut saw, planer, bandsaw, boring tool and emery wheel, or sander.

In the machine shop the equipment includes a fifty-ton arbor press; a twenty-four inch drill press; a lathe with complete set of dogs for holding the work, and a set of Armstrong tools; acetylene welding apparatus; an air compressor; a small Dumont transmission shaft grinder; a Martel outfit for lining up main bearings; large and small portable electric drills for plugging in along the wall; a full set of standard taps and dies; a Franklin valve grinding outfit that will grind any type of valve and re-seating reamers; a blacksmithing forge and anvil, and numerous small bench tools, including garage vises. The company repairs its own truck radiators.

No Mechanical Loafers Allowed

How the Independent Warehouses, Inc., New York, Cuts Out Idle Time on Short Hauls by Using Trailers

By FRED L. PALMER

NO motive power produces any value when not in service. It goes without saying that an engine, however efficient it may be when active, is a losing investment when standing idle.

One problem of a transportation organization is to keep its hauling power constantly in service during the working day. If the engine of a truck must be idle one hour during the time of loading, that time represents a loss. And not only does the owner lose that much service on his automotive power but at the same time he loses on the service of the chauffeur in charge of the machine.

These facts are obvious as stated. But the remedies are not always so obvious.

The Independent Warehouses, Inc., whose hauling is

done by the United States Trucking Corporation, both being branches of the United States Distributing Corporation, New York, has solved the problem by the simple process of making its motive power a unit separate from the haul. It amputated the engine—freed it from the load.

It took four 5-ton Pierce-Arrow trucks, which were in service when these changes were made, cut down the wheel base, made them into tractors, and bought eight Lapeer semi-trailers of especially large body capacity. A year and a half later the order was supplemented by another for eight more trailers—which were bought without the addition of any tractors, for the reason that experience in the particular circumstances under which the organization operates showed that one tractor unit was capable of keeping four trailers in service.

THE Independent Warehouses, Inc., operates seven warehouses in the downtown district of New York City. They are of three kinds—designed for (a) storage, (b) carload lots of freight, and (c) less than carload lots. Traffic moves to and from Erie Railroad terminals, located across the Hudson River, in Jersey City. The crossing is made by ferries at the terminals. On the New York side the haul averages about half a mile.

In the beginning, all of the hauling of the United States Trucking Corpora-

tion was done by horse. Later it was supplemented by motor trucks. But the necessity for more constant service suggested the employment of trailers and tractors.

The value of this unit in wiping off the losses due to idleness while loading encouraged the additional purchase, a year after the first, and has resulted in a determination by the organization to add still more to the present fleet.

The additions, it is interesting to note, will be made on a ratio of four to one—four trailers to one tractor. This is a

higher ratio than usually obtains in hauling operations—due largely to the extreme shortness of the hauls. Ordinarily trailers are used in a ratio of three to one—a loaded trailer being in transit while one is being loaded at each end of the haul. But the rapidity of the tractors' action makes it possible for each to handle four trailers—through the assistance of a communication system between the warehouses and the terminals.

The value of the motive power as a separate unit is increased not only in



Part of the truck and tractor fleet operated by the Independent Warehouses, Inc.

The Trailer and the Warehouse

WITH the use of sixteen semi-trailers pulled with tractors fashioned out of 5-ton motor trucks the Independent Warehouses, Inc., New York, has solved its "idle time" problem.

The trucks thus converted have, in their job as pullers-of-loads, a maximum capacity four times their rated capacity.

Mr. Palmer explains why the Independent intends to add to its present tractor-and-trailer fleet.

the matter of active service, but also in its intrinsic usefulness.

For example, the maximum load of a truck used by the corporation is about twice its rated capacity. The 5-ton trucks which were transformed into tractors would, therefore, never have carried a load greater than ten tons. But in their job as pullers-of-loads their maximum capacity, instead of being double the rated capacity, is four times its rating.

"A great number of our trailer loads are twenty tons," to quote one of the Independent's officers, "but on account of numerous light and bulky loads the average is brought down to somewhere around fifteen tons."

Saving on Wages

Even by that statement, however, the average haul of a 5-ton truck was increased to three times its rated capacity and to half again as much as its maximum capacity as a carrier.

In circumstances such as the corporation faces—when hauling is done between depots controlled by the hauling organization—the service of the chauffeur is purely that of a driver. Checking of merchandise is done by the organization itself, and there is no need for counter-checking. If, then, the chauffeur, paid very nearly one dollar an hour, were obliged to sit idle during an hour of loading and unloading at each end of the trip, the corporation would lose not only on the value of its automotive service, but on the value of the driver's time as well—at the rate of almost a dollar an hour at each end. To quote further:

"Approximately half the time of the trucks and chauffeurs is lost during loading and unloading operations. That means a loss of \$3.50 a day for each of our twelve trucks—or \$42 per day paid for idleness of the driver. For that reason we use the trucks on the longer hauls to Brooklyn, where the driver must act as a checker during the unloading and where the class of freight carried brings in a greater revenue."

By freeing the power unit for continuous service this loss was prevented. But at the same time, when circumstances make it necessary for the driver of a load to act as checker of the mer-



An Independent warehouse 5-ton Pierce-Arrow motor truck converted into a tractor and hauling a Lapeer semi-trailer

chandise, the corporation is no worse off than it was before, as in either case the motive power must stand idle. In one respect it is better off, because the idle unit in the case of the tractor represents a smaller investment. The initial cost of a trailer unit—a tractor and three semi-trailers—represents one-half the investment in three motor trucks.

In the matter of up-keep, the trucking corporation estimates that there is little difference between its 5-ton tractor-trailer unit and 7½-ton trucks. But the service which accounts for cost and depreciation is much greater in the case of the former—the trailer carrying twice the load at the same expense and being actively in service almost continuously.

A still further advantage of the trailer for the warehouse concern lies in the fact that it can, in a manner of speaking, be loaded in two places at the same time. The morning hauls always start on the New Jersey side, where the railroads have been bringing in merchandise during the night. By the time the trailers have been loaded at the railroad terminals, merchants in New York have begun to bring their loads to the warehouses. As a result, when the east-bound freight reaches New York, time enough has elapsed so that the warehouses, beginning the day later than the railroads, can have ready trailer loads bound west.

Due to the fact that the crossings are made by ferry the actual hauling service of the tractors averages only half a mile each way. On the average, therefore, the actual hauling amounts to some five or six miles a day per tractor. This may be compared with an actual hauling distance for horse-drawn trucks of about a mile and a half to two miles per day—carrying an average per load of about one-quarter that of the trailer.

Adaptability of Trailer

There is a close similarity between the function of the horse and the tractor. The particular advantage of the horse over the truck lies in his adaptability to changing conditions, as he may be attached to any sort of vehicle in single or multiple teams. For that advantage the owner pays very close to the same amount in up-keep that he does for a trailer, although a much smaller initial investment.

However, the trailer serves much the same purpose. It, too, is adaptable. It may be hitched and unhitched—by a

much simpler process than the horse and wagon. And it offsets the initial cost factor by the very great advantages it possesses in speed and pulling power, not to mention such matters as stamina and the greater convenience of garage facilities compared with stables.

The transportation of merchandise from railroad to warehouse by the Independent has always been done by horse or trailer exclusively. Trucks are used only for such as the Brooklyn hauls, where the warehouses served do not belong to the hauling concern.

One-Tenth of Chicago Moves!

Some interesting statistics on spring moving in Chicago and suburbs was broadcast by radio from Station WTAY, Oak Park, Ill., on April 14 by T. A. Jackson, president of the Jackson Storage & Van Co.

"A large percentage of the families in this locality will be on wheels in the next thirty days," Mr. Jackson told his unseen public. "During the spring moving season of 1924 the gas company had 53,309 orders to shut off gas in the month of April and in May had 47,704, making a total of 100,013, four thousand of which moved to the suburbs. In one day they had 9000 orders to turn the gas on."

"Assuming that there are four persons to a family, these figures show that more than 400,000 persons, or one-tenth of the population of Chicago and its suburbs, changed their residences last spring. This is about 12,000 more than moved in 1923, and the orders booked up to date show that there will be far more moving this year than ever before."

"Few cities have what is called a moving day and every effort has been made by the van companies and others affected to abolish this custom of May first moving, with very unsatisfactory results, and it has been given up as hopeless."

Unit Company to Build

The Unit Storage, Inc., has awarded to Moores & Dunford, Inc., a contract for the erection of an exclusively "box type" of warehouse, with a capacity of 1000 van loads, together with space for cold storage of furs, rugs and trunks. There will be a new type of rooms for fur and rug storage, vaults for valuable paintings, tapestries and draperies, piano rooms and special musical instrument rooms and elaborate offices. The structure will cost about \$600,000.

Warehouse Construction

The "Ideal" Modern Plant for Storage of Merchandise

By CHARLES H. MOORES

President Moores & Dunford, Inc., Architects

THE general merchandise warehouse (or terminal warehouse, if you choose to call it so) has become a recognized necessity since the war, or in the past seven years. While we have had so-called storage houses since the beginning of civilization, it is only within the recent few years that this enterprise has been recognized as a public utility and a public need.

National shippers, manufacturers and refiners are fast coming to the point where they comprehend that properly built fireproof warehouses placed at strategic points of distribution, with a financially responsible management, are entirely necessary to their general scheme of distribution.

A great many warehousemen and most of the people in a city where a terminal is built are not familiar with the business-getting end of such an organization, and seem to think that most of the patronage must come from the city itself. This, however, is not the fact. Only a small part of it usually comes from the local city. The majority (perhaps more than 80 per cent) of the business done by the terminal comes from other cities and directly from the producers such as manufacturers, refiners, importers and large jobbers, who may be classified as the distributors.

It is their business to market their product. The sales manager is interested in the terminal because he can tell the customer of his particular house that spot stocks are carried for immediate delivery at this point, and that ten-hour deliveries can be made upon sales. This is quite a point in competition where his competitor requires several weeks to ship L. C. L. by freight.

The traffic manager is interested in saving money for his company. If the proper facilities and services are offered he can ship in carload lots for distribution by

motor truck from this point at a considerable saving in freight rates. Therefore, the interest of the distributor in a modern terminal and one can visualize the tremendous service such an institution is both to the distributor and the consumer.

A moment's thought will convince the reader that the large majority of the business to be done by a terminal comes from the distributor and not from the local population.

If one will consider the amount of food consumed by one person in thirty days' time, together with the packages and packings that this food comes in, he will find that it requires approximately one square foot of space in a warehouse to store the foodstuffs of the average person in one month.

A little further thought along this same line will show that it requires another square foot of floor space to store and care for the clothing, hats, shoes, rubber goods, household furnishings, hardware etc. used by each person in the community.

Therefore in general merchandise storage and in cold storage it requires approximately two square feet of storage space to care for every man, woman and child in that community. The community in this instance covers a distance of approximately twenty miles in each direction, or an area of forty square miles. This can be served locally from a terminal by motor truck.

Naturally all of this commodity will not pass through the one house. A portion is raised locally. However, it is safe to say that 70 per cent of it must be imported, and a terminal building, particularly the combination type, can be based upon the ultimate use of 50 per cent of the aggregate of storage estimated along this line.

SUCH warehouses should be modern in design, fireproof, with the proper rail and trucking facilities, and, when located in sea port or lake towns, should have dock and rail service.

The terminal warehouse, to be successful, must be financially sound and under responsible management. In the matter of records and accounting sys-

tems it would be a great benefit to the warehouseman as well as to the distributors if unified records and accounting systems could be installed. In addition they should provide office space for brokers who sell goods, leasing display space for jobbers who buy the goods.

The management of such a house

should arrange to handle pool car delivery, and, where possible, in trap cars. They should also be prepared to do a forwarding business.

There is a distinct financing side of such an enterprise. The warehouse should make the proper arrangements through local banks, if possible, to finance warehouse receipts on com-

Two "Ideal" Modern Storage Plants

WHAT, Mr. Moores was asked, is the "ideal" modern merchandise warehouse of today with relation to location, design, construction, lay-out, facilities, rail sidings, service and kindred fundamentals?

In this article the architect, head of Moores & Dunford, Inc., divides his answer into two parts. The first, published herewith, deals with "the smaller type terminal for the smaller city but designed to meet the requirements of a number of small towns and villages within a radius of 15 miles and with an estimated population of between 300,000 and 400,000"—in this case the new building of the Lehigh & New England Terminal Warehouse Co., Bethlehem, Pa.

The second part will be published in the July issue of *Distribution & Warehousing* and its tells about great new project of the Detroit Railway & Harbor Terminal Co., identified with the National Terminals Corp.

modities stored in their terminal when requested to do so. They should also have a service department which would bring the buyer and seller into contact with each other without exacting a commission.

The terminal should have an insurance department that would be in a position to place blanket insurance on merchandise in transit or merchandise in storage for their customers. Ar-

rangements can be made through the New York Reciprocal Underwriters through which the warehouseman can derive a substantial source of income from this department.

A traffic department should be developed and maintained that would continually secure advantages for their terminal in the way of storage in transit, new classifications, and to handle many other traffic problems.

By the foregoing brief description it will be noted that the real general merchandise or terminal warehouse is a scientific development with a carefully selected organization to give service to their customers and relief to the general public. With such houses located at

well chosen points of distribution a smooth business system may be developed in the handling of foodstuffs and manufactured products direct from the producer through the retailer to the purchaser or the public with the least possible expense and a constant flow of fresh goods.

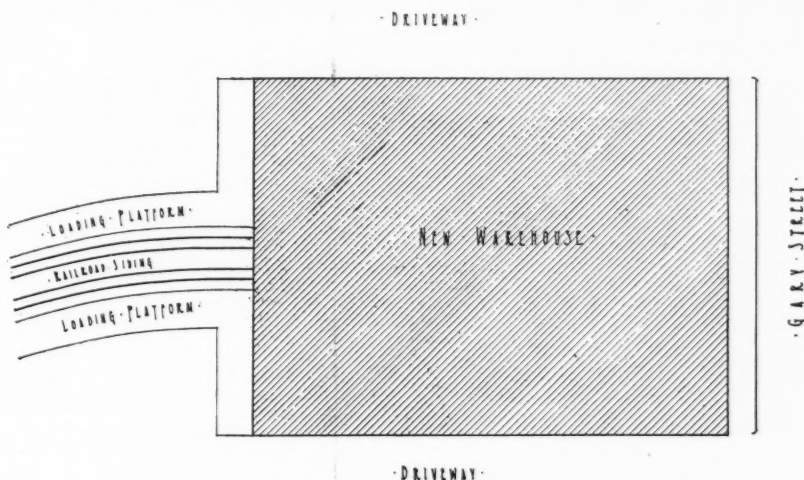
Our investigations have shown that the modern warehouse is not specifically and only a place to store general merchandise until used, but is distinctly a service organization as well. However the many ramifications of operation do not enter into the scope of this article.

One of the most important features in the development of a workable plant is naturally the design of the warehouse. There are many features that must be carefully considered in the original planning in order that the maximum amount of space may be available for storage, and that the commodity may be handled not only at a minimum cost but with maximum service to the customer.

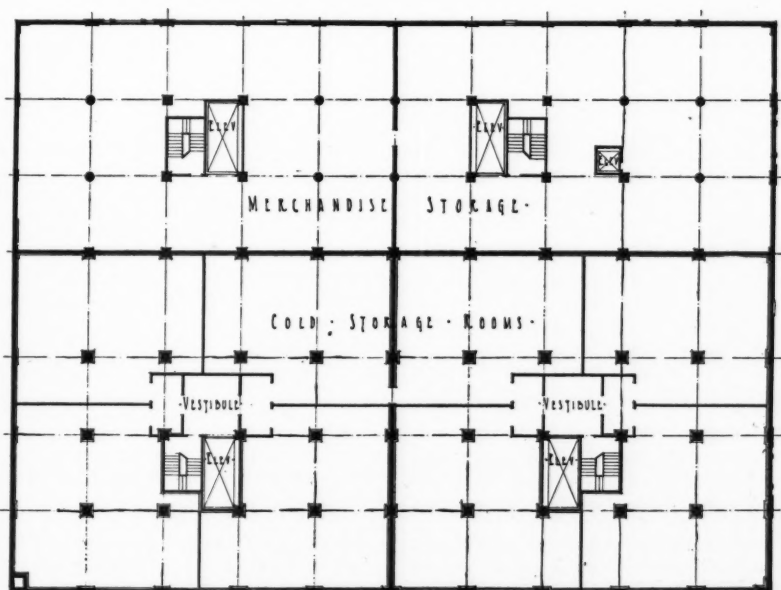
I am going to describe to you two distinct types of warehouses, both of which were designed to meet the particular requirements of the city and surrounding territory in which they were built.

The first is the smaller type terminal for the smaller city but designed to meet the requirements of a number of small towns and villages within a radius of 15 miles and with an estimated population of between 300,000 and 400,000.

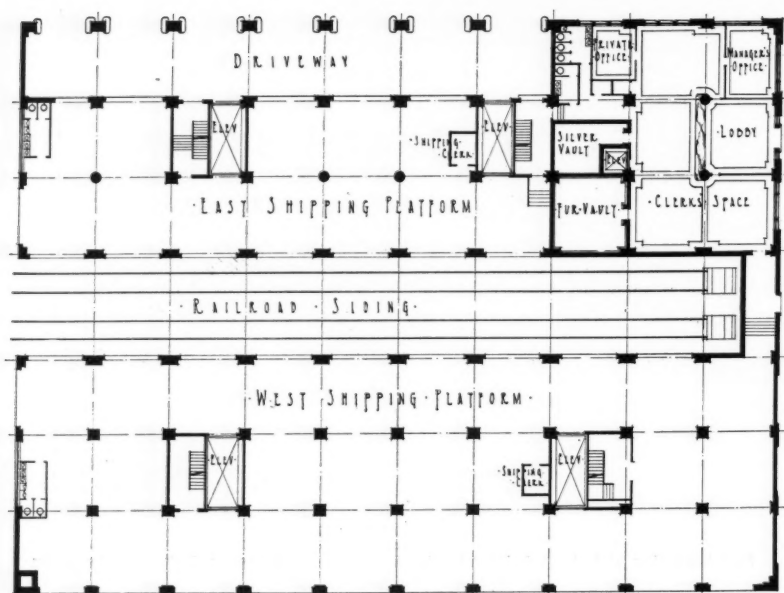
This building is at the present time under construction in Bethlehem, Pa., and is being erected for the Lehigh & New England Terminal Warehouse Co. It is what is known as a combination house, or, in other words, the facilities cover the storage of general merchandise, the storage of fruits, butter, eggs, meats and vegetables under cold storage, the storage of household goods in private rooms, the storage of furs and valuable rugs under cold storage, and the



Plot floor plan of Lehigh & New England Terminal Warehouse Co.'s building being erected at Bethlehem, Pa.



Typical floor plan of new storage plant of Lehigh & New England Terminal Warehouse Co., Bethlehem, Pa.



Plan of first floor, Lehigh & New England's new building

storage of trunks, pianos and musical instruments. In addition to this the facilities are such that they are in a position to handle pool car deliveries and do a general forwarding business.

This building was designed by Moores & Dunford, Inc., New York City, and is being erected by Cramp & Co., Philadelphia. It might be of interest to readers of this article who contemplate the erection of a similar development to know that the financing of this entire enterprise was underwritten by Mackie-Hentz & Co., 1503 Walnut Street, Philadelphia.

The terminal will have a well equipped motor truck department to assist the distributor in making quick deliveries within a radius of twenty miles. The financial department will also assist in the financing of warehouse receipts for customers. The traffic department will continually look after the interests of customers, paying particular attention to the commodity received under the heading "storage in transit." The organization will be under the direct management of Mr. S. V. P. Quackenbush.

By referring to the first floor plan (above) it will be noted that the office section is on the southeast corner, with space properly arranged to give quick and satisfactory service.

On account of this being a combination house the offices are provided with a silver vault and a fur storage vault directly on the first floor. Adequate lavatory facilities are provided for the office help and customers.

Elevators

It will be noted that this building is divided into two sections on the first floor level and is served by four freight elevators, each capable of handling an automobile with a speed of approximately 150 feet a minute, and are of the

"self-levelling" type. These cars will make an average round trip with two stops in seventy seconds, or an average round trip, loading and unloading one truck at two stops, in two minutes at a minimum.

In houses where two or more elevators are employed intermittently this type of elevator is desirable, as it does not require an expert operator. A mediocre elevator operator such as is developed among all employees of the warehouse, who can stop the car within four or five inches of the platform, is all that is required. The self-levelling device immediately comes automatically into action, bringing the car platform to exactly the floor level.

Another distinct advantage of this type of elevator is that usually two or more trucks are carried up at one lift; they may weigh from 1000 to 3000 lb. each—many times the maximum. Arriving at the floor level, if a truck weighing 3000 lb. should be run off, the stretch in the elevator cable is immediately taken up and the car raises one-half an inch or more. This would mean that the second truck, if unloaded, would have to drop down a half inch to the floor level from the elevator platform, which is extremely injurious to the floor landing and the axle and of the wheels of the truck—to say nothing of the jar to the commodity. There is only one other alternative. The elevator must be lowered before the second truck is taken off.

This is obviously unnecessary with the self-levelling type of elevator. Immediately upon the release of the load and the taking up of the slack of the cable, the automatic device brings the car platform back to a perfect level before the second truck is rolled off, meaning no delay or "inching" of the car.

In addition to being a time-saver this

elevator will cost less money than the necessarily higher speed elevator to accomplish the same results in the same time, and the maintenance and cost of power make an appreciable saving when the elevators are used a lot in the period of a year.

The First Floor

It will be noted, in the plan of the first floor, that two side tracks run immediately into this building, accommodating the unloading of eight cars at one switching inside of the buildings, with four cars at the outside platforms. The entire length of the shipping platform opens between all columns and is equipped with steel rolling shutters, making the spottings of cars very much easier.

The platform edge of the floors on both sides of the side tracks each is provided with a steel grid inlaid in the concrete floor to preserve the natural wear and tear usually found so disagreeable, and assuring a smooth wearing surface for years to come, despite the constant dropping of trucks from the improvised bridges leading onto the freight cars.

The balance of the first floor of each unit is provided with a top dressing of screened granite with floor hardener, giving the best known type of wearing surface for warehouse purposes. It should always be borne in mind that with a warehouse seven stories high there will be six times the trucking on the first floor that you will have on any of the other floors; or, in other words, all of the commodities stored on the floors above will have to pass over the first floor. Therefore particular attention should be paid to the specifications for the first floor or shipping platform.

By referring to the Lehigh drawings it will be noted that the east side of the warehouse is provided with driveways where commodities susceptible to inclement weather may be loaded under cover, with tarpaulins placed over them before going out into the rain. This is particularly desirable on many commodities stored in a warehouse of this kind.

On the west side these provisions have not been made on account of contemplated further extensions. You will note, however, that there are ten openings for delivery and receiving trucks accommodating twenty trucks at one time. Each of these openings, of large dimensions, is provided with steel rolling shutters.

By referring to the first floor plan you will find an opening on the south side, or front, of the building just west of the general entrance; here teamsters may come to receive their orders with direct contact with the commercial side of the general offices and without entering the offices.

It will be noted also that there is a passageway at this point between the two sections of the first floor of this building.

A shipping clerks' office, heated in winter time, is provided on both sections

of the first floor, each having a recording scale of sufficient capacity for the purpose intended.

In the two side tracks cars may be unloaded from either side through the cars, or access when cars are spotted may be had through the empty cars.

Incorporated in the plans for this terminal provisions are made for 50,000 sq. ft. of cold storage space. This will be located in the west wing.

By referring to the typical floor plan it will be noted that on each floor there are eight compartments on the west side of the building. These compartments are so arranged and the equipment so provided that temperatures varying from 40 deg. to zero may be maintained in most all of the compartments, giving within economic discretion the maximum flexibility in plant operation.

The east side of the building, divided into two larger sections, is entirely for general merchandise storage.

In the choice of cold storage equipment great care should be used and only engineers thoroughly versed in the science of refrigeration and the practical application of it should have this work in charge. Much depends on the general layout, the flexibility, and particularly the type or class of refrigeration machinery employed.

In this particular plant a medium speed brine system is being installed. The speed will be a trifle less than 200 revolutions.

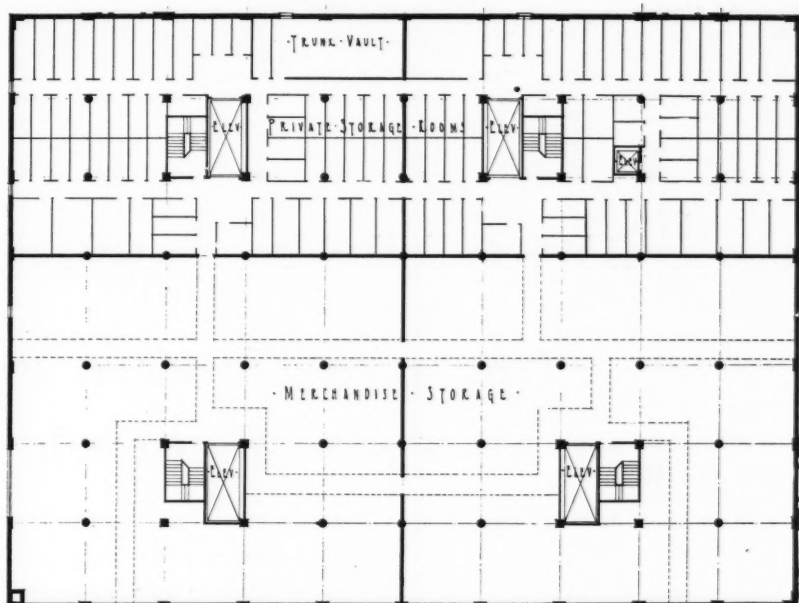
The egg rooms are carefully arranged and the bunker rooms will be provided with humidity regulating equipment, taking the fresh air directly from the outside, assuring a constant circulation of pure air at the proper temperature.

Ozone machines are provided for each compartment, and each compartment has a specially regulated ventilation system taking the pure air from the outside, chilled to the proper temperature, and replacing the stale air in each room whenever desired by the operator. This, in my opinion, is a very essential feature in the preservation of fruits and foodstuffs, and is more or less an innovation in storage of this character. The cost of installation and maintenance is surprisingly low and should guarantee as nearly 100 per cent results as possible in the long preservation of edibles. In addition it gives the operator opportunity when a room is entirely cleaned out, perfectly to ventilate the room, removing all odors without increasing the temperature.

The major part of the seventh floor is devoted to general merchandise storage. The east section, however, is taken over entirely by private rooms for storage of household goods. A trunk room also is provided on this floor.

The mezzanine floor completes the household goods section; here provision has been made for the storage of pianos and musical instruments, and for a modern rug vault for storage of valuable rugs under cold storage.

The superstructure of the Lehigh building is entirely designed in reinforced concrete, which showed a saving



Seventh floor plan, Lehigh & New England's new warehouse

of approximately 8 per cent in the cost over structural steel, and lends itself much better to the general design of the warehouse. The flat slab system was used, giving a flat surface to the ceilings without protruding beams and girders.

The outside or curtain walls are built of a special laminated design with eight inches of brick and four inches of interlocking, heavy duty, impervious tile. This tile has a smooth surface on the inside and acts as an insulation against heat, moisture or cold. It is desirable—particularly in a general merchandise or household goods warehouse—for the reason that the air pockets prevent the cold or heat from traveling through the wall, giving the warehouse a more even temperature.

Waterproofing

If reinforced concrete walls are used, in the winter time the walls become very cold and retain the temperature for some time, giving an opportunity for condensation on the outside walls when the warmer and hot days occur, allowing the warmth and humidity-laden air to enter the warehouse through the windows or stairwells, striking the cold surface and giving a moisture in the house that will not be found in the other type of inclosing wall.

It must be understood that this wall is not what might be termed "waterproof." Great care must be exercised in the masonry work to lay the tile and brick in a waterproof mortar. If even small voids are left, the air pressure or wind pressure will drive the rain in through this wall if the work is not properly done.

The best procedure is to waterproof the entire outside walls, particularly the

wall in the direction of the prevailing high winds.

The designing of the lintels and floors and columns around the inclosure must be given careful consideration and the joints of the tile and brick curtain walls Min-waxed where they join the concrete work. Otherwise the building is apt to have a leaky wall if not waterproofed.

Another point—particularly in small towns—is the choosing of a location with either well-paved or otherwise good roads to the business section, and to the State roads leading to small towns for distribution. This is important from a service point of view, and should be given careful consideration.

Also, all surrounding or adjacent streets that will be used in trucking, loading and unloading, both at the building and delivery platforms, should be properly paved with a substantial pavement that will last for some years. A cheap makeshift pavement at the building is a poor investment.

In the design of the Lehigh building all floors have been sloped to outside wall, and scupper holes provided so that in case of fire or accidental discharge of sprinkler heads the water will drain quickly to the outside, not penetrating the floors or running down the stairwells to damage commodities stored on other floors.

A sprinkler system has been installed with a two-way intake, giving a maximum fire protection that should insure the lowest possible insurance rate.

The foregoing will give you a good idea of the general layout and possibilities of the combination terminal, or a terminal that provides locally for the storage of household goods and personal effects and gives to the community a complete, modern plant for the storage of all general merchandise under both

dry and cold storage conditions.

It might be interesting to readers to know that this building, without equipment, or the entire building, including

the light and offices, cost \$2.23 per square foot. The completed building, including cold storage, elevators, heating, sprinkling system and all equipment

shown, ready for operation, costs \$3.30 per square foot. These are the figures on which the contracts were awarded.

(To be concluded)

Warehouse Construction

The "Ideal" Modern Plant for Storage of Household Goods

By GEORGE S. KINGSLEY,

Warehouse Architect

"**Y**E Editor" has requested me to write an article on fireproof household goods warehouse construction and I am therefore jotting down a few of my thoughts which I hope may in a general way be of service to warehousemen contemplating the erection of a modern warehouse which is to be devoted to the storage of household goods only.

I am glad the editor has selected some one else to write *A History of Warehousing**, as my efforts in this direction would be somewhat confused when I think of the various contentions, by warehousemen whom I have met, as to the party responsible for the first warehouse or in what locality the first warehouse was constructed. What chance would I have, for instance, against the contentions of Arthur Reebie, who claims that the Egyptians were the first warehousemen and that the original warehouse was built on the banks of the River Nile and used for the purpose of storing grain?

And, then again, there are warehousemen who set forth arguments as to the inventor or inventors of warehousing, one of whom is Charles S. Morris, who claims Moses was the boy who did the trick; or Walter Sweeting, who says Old Man Atlas was responsible.

In addition to these there are numerous other claims from warehousemen who have their pet theories as to the first warehouseman. Among these are Walter C. Reid, who gives credit to Father Knickerbocker; C. A. Aspinwall, to George Washington; Ralph Woods, to Abraham Lincoln; Willard Eldredge, to Father Neptune; Frank Hebard, who claims the inventor was a Scotchman, as he played golf; or "Jay" Gould, who thinks a Japanese was the party and that the original warehouse was erected in southern Cali-

fornia near the Mexican line and was built of "dobe" mud to protect the contents from the climate.

As to the localities in which the original warehouse was built, the arguments are even more numerous. Tom Jackson says Portugal was the place; Sidney David claims the "House of David" was the original warehouse; "Bill" Bostwick, who gives Jersey City the credit; Harry Strang, who claims Brooklyn is the place;; James F. Keenan, that Ireland was the place; Lee Orcutt, that the Mississippi Valley was the locality; Lee Cotter, that Ohio was the scene of original warehouse construction; while Ben Hurwitz sets up a claim from way down in the Southwest, and J. B. Baillargeon says Montreal was the city and that the inventor was a Frenchman; or "Bill" Coakley, that Milwaukee has claims to the honor and that the first warehouseman was a German. Then there is John Neeser, who insists that Manhattan Island should be listed in the claim list, and Martin Kennelly that Chicago should head the list. And the further claim of Floyd Bateman, who takes issue with no one, either as to the inventor of the locality, but who puts up a strong argument that a freight car was the original warehouse.

In fact the arguments *pro* and *con* are more numerous than Bekins warehouses, and as never-ending as a Ford-Skellet controversy. Small wonder that my thoughts become confused when I contemplate the task of writing *A History of Warehousing*, and I feel relieved that Kent Stiles, "ye editor," did not impose it upon me. He probably thought it would make too long a subject for one article, or that I could not write it anyway, for which I give him credit.

WITH that phase of warehousing eliminated from this article, let us proceed to select a site for a modern fireproof furniture storage warehouse. Are you going to select a site up some back alley or on some side street, far removed from the higher class resi-

dential districts, as you did of yore? Not if you are going to stay in the warehouse business.

The war is over. Business is not going to come to you—you are going after business. So it behooves you to select a prominent site in the business district of a residential neighborhood, where your warehouse can be seen.

Did it ever occur to you that a household goods warehouseman is a "retailer of space," and that a warehouse is in the same category as a department store or a retail shop?

Who mostly patronizes a department store? Women, of course, as all you married warehousemen well know because you receive evidence of this fact,

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Here Are Some Kingsley Interiors



1. Customers' counter, Werner Bros. Fireproof Storage Co., Chicago. 2. Working space, main office, Jackson Storage & Van Co., Chicago. 3. A nook in one corner of main office of Jackson Company. 4. Customers' counter, Jackson Company. 5. Customers' counter, Eldredge Express & Storage Warehouse Co., Atlantic City, N. J. 6. Customers' counter, W. C. Reebie & Brother, Chicago

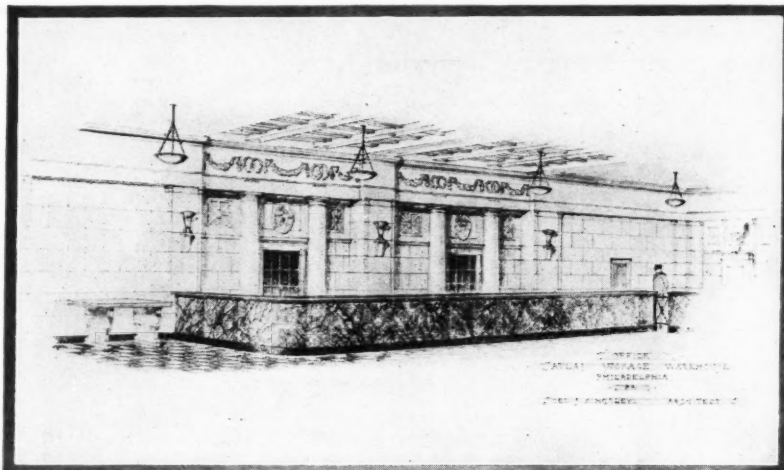
on the first of each month, in the form of bills from department stores or retail shops, contracted by the "better half"—perhaps without your knowledge or consent.

Inasmuch as your business is kin of the retailer's, it is just as important that you select a site similar in character.

True, the cost of some sites in districts of this kind is prohibitive for warehouse purposes, in which case try and find one as near as possible and so situated that your warehouse will be visible from the shop district.

The tendency in larger American cities is for a series of outlying zoned

business districts one of which as a rule makes a desirable site for a household goods warehouse and in which a warehouse will become an established institution, as well known as the local "movie" theater, bank, or department stores, and where the cost of the site is much less expensive than in the "down



A drawing of the office planned for the new building of the Atlas Storage Warehouse Co., Philadelphia

town" section of your home community.

If possible, select a site with a rear or side entrance for vans, so that the frontage may be kept free for business purposes only, the tendency nowadays being to utilize the first story street frontage for the warehouse offices and for retail shops for rental purposes.

Construction details vary to a considerable extent. Local building laws and insurance regulations have much to do with the plan of your warehouse. Preliminary sketches should be first submitted to your local building department and Board of Underwriters for their criticism.

As a general proposition the flat slab type of reinforced concrete construction, with brick or concrete inclosing walls, has proven the most popular method. The flat ceiling of this class of construction lends itself readily to a neat and economical joining of ceiling and partitions.

In wet climates particular care should be taken in the construction of exterior inclosing walls, as a dry warehouse is a positive necessity. A 12-inch brick inclosing wall makes a very satisfactory wall, as a rule, but in some localities it is necessary to use a waterproofing.

A more economical method is to use 8 inches of interlocking tile, with a 4-inch exterior facing of brick; but personally, I would prefer a 12-inch solid brick wall, which is much stronger and also more nearly waterproof. Where concrete walls are used, an integral waterproofing should be used. Concrete walls may be 8 inches in thickness, and lined on the inside with 4 inches of hollow tile to prevent dampness. Or the concrete wall can be 9 inches in thickness and a 3-inch hollow tile lining be used. In any event the walls should be 12 inches thick over all to meet with most Underwriters' requirements.

The flat type of roof is becoming more popular and, when covered with Barrett specification tar and gravel, is positively waterproof. For partitions I generally use smooth hard clay tile, for corridor

partitions, and gypsum blocks for dividing partition between storage rooms.

Foundations are a separate problem for each warehouse, and must be carefully worked out. It is difficult to generalize on this portion of a building—you better leave the foundations to your architect or engineer.

If possible, arrange an under-cover loading room adjacent to the freight

The "Ideal" Modern Furniture Plant

WHAT is the "ideal" modern household goods warehouse of today? Mr. Kingsley was asked to express his opinions for this special issue of *Distribution & Warehousing* and he has done so in detail with relation to location, construction, loading room, fire doors, storage space, elevators, heating, sprinklers, lighting, etc.

The storage executive who is contemplating building a new furniture warehouse will find spread before him here the thoughts of an architect experienced in this field of designing and constructing.

elevator. With the high priced furniture being handled by warehousemen it is important that every precaution possible be taken in the care of it, and an under-cover arrangement for loading and unloading is highly important. In some localities this space may be utilized as a garage without violating local building laws or materially affecting insurance rates.

Usually automatic fire doors are required on openings in walls between warehouse and loading space. All doors in a warehouse should be labeled by the Board of Fire Underwriters if the lowest possible rate of fire insurance is to be

obtained, and it is essential that the insurance rate be as low as possible.

Separate concrete vaults, built according to burglary insurance company specifications, should be provided for rugs, trunks and silverware. Rug and trunk racks made of enameled metal, which make a neat appearance, may be obtained from manufacturers making a specialty of them. A special concrete vault should be provided for excelsior storage and located near the packing room.

A piano room, specially heated and finished, is desirable. While some warehousemen argue that pianos are out of date, this space can be utilized for radio outfits, Victrolas, pictures, or specially high-priced furniture requiring great care.

As to the proportion of open storage room required, your local insurance regulations and your own needs will guide you in your decision. If possible, without increasing the insurance rate, an equal amount of space devoted to rooms and open storage would be desirable. During the early stages of the operation of a new warehouse the open storage can be used for the temporary storage of new cars belonging to automobile dealers, which helps along on the warehouse income. An ideal way would be all room storage, if this were possible, as every layman would like his or her household goods stored in a separate compartment; and where competition is keen it makes good "selling" talk.

If your new warehouse is to be in a district such as I have heretofore mentioned, it is important that the warehouse offices be attractive as well as efficiently planned. Make a study of your office requirements as to number of desks, location of switchboard, drivers' window, private offices, lavatories, etc. Light, attractive and efficient offices are necessary and have much to do with the success of a warehouse.

A passenger elevator is a positive requirement in a modern warehouse. If properly arranged it can be used for an emergency freight elevator. This elevator should be of ample size and capacity properly to function for successful operation. If automobiles are to be stored, it should be at least 18 feet long, or if possible a foot or two longer.

Your drivers, helpers and warehousemen are human beings, and their comfort should be considered. Separate lavatories for these workers should be provided and lockers arranged for each man.

To draw trade to a warehouse, as well as to produce a steady income—other than through pure storage—retail shops can be provided in the first story, facing the street. Several high class shops adjacent to the warehouse offices make for a better neighborhood in the immediate vicinity of the warehouse entrance and draws attention to the average shopper of the existence and convenience.

The front exterior of a warehouse is an important feature. Make it distinctive and attractive—something to be

remembered by the passerby, so he or she will have it in mind when the time comes for need of its service.

Provide ample storage for packing lumber, barrels, boxes, etc., adjacent to the packing room. If ventilation can be arranged, the basement is the place for the packing room; otherwise valuable revenue-producing space on upper floors will have to be used. Extend electric power service wires for a swing saw to be installed in the packing room.

Heating

A heating plant of sufficient size should be installed. The boilers should be in a separate room in the basement, to insure the cleanliness of the balance of the basement. Space for at least a carload of coal is good business. Your heating plant should be of sufficient size to heat the first story and the piano room, in an upper story, to 70 degrees Fahr. in the coldest weather, and the upper stories to 50 degrees. It is a good practice to provide the radiation and boiler capacity for heating the warehouse in this manner, although the upper floors, which are devoted to storage, need be heated only occasionally. During a long wet or cold spell it is desirable to be able to heat the upper stories for the purpose of drying out, or for the comfort of employees or customers.

A good method is to provide two boilers, one to be used most of the time and the two only at such times as the upper stories are being heated. By having two boilers you are always sure of heat, for if one boiler is out of commission the other is ready for immediate use.

The use of a sprinkler system in a household goods warehouse is held by most warehousemen to be unnecessary. The chief objection seems to be the fear of accidental discharge of sprinkler heads and consequent damage by water. As a matter of fact statistics of the National Board of Fire Underwriters show the accidental discharge of one sprinkler head in 30,000 per annum. The average household goods warehouse contains less than 1000 heads, so you can figure out the chance of damage from this source. The sprinkler system does wonders, however, to the insurance rate. In a warehouse in which one was installed the rate was cut from 80 cents for open storage to 30 cents, and in another from 80 cents to 20 cents, the latter in connection with a special alarm service.

I am not advocating the use of sprinklers but merely trying to state the facts regarding them. The chief objection, I find, is their cost and the difficulty of financing. In the old days the sprinkler manufacturers would install sprinkler systems and take their pay in yearly installments, equal to the saving in insurance premiums. But the war put an end to that method.

The illumination of your warehouse at night is a big advertising feature. Choose light materials for the construction of the front, so that light rays will be reflected instead of absorbed, as is the case with dark colors. If circum-



This is Mr. Kingsley's conception of a household goods warehouse floor showing cleanly lighted aisle flanked by locker storage rooms amply protected by fire doors

stances are such that flood lighting can be utilized, it is a cheaper method of operation than electric signs—and more effective.

Hand Book Recommended

Illuminating clocks are an advertising device calculated to attract attention to the warehouse, and money expended therefor is well spent.

It has lately been my good fortune to have had the privilege of reading the proofs of a chapter in the forthcoming hand book of the American Warehousemen's Association devoted to the construction of household goods warehouses, and I would suggest that warehousemen who contemplate the erection of a new building obtain copies when they are off the press. This particular chapter was compiled by the hand book committee of the American Warehousemen's Association, of which C. A. Aspinwall is chairman.

If you build your new warehouse in a locality such as I have described, and generally in a manner as heretofore set

forth, plus a lot of pep and hustle on your part, it will be a success—yes, even in spite of drivers' strikes, balky trucks, truck repair bills, trans-continental freight rates, cross-word insurance puzzles, wrathful customers, scratched furniture, May 1 rushes, cut-rate competition, too low estimates, income taxes, negotiable or non-negotiable warehouse receipts, mortgages, pad marks, moths, cost finding systems, slow paying correspondents, union rules and Mackinac Island conventions.

Trade Information Bulletins

The Bureau of Foreign and Domestic Commerce of the Department of Commerce has published two trade information bulletins which are of interest to shippers, as follows:

"Freight Forwarding in the United States and Abroad." Trade Information Bulletin No. 310.

"Planning Salesmen's Territories." Trade Information Bulletin No. 314.

A Directory of Material Handling Machinery

For Use in Public Warehouses

With Which Is Included a Classification of Miscellaneous Equipment and Supplies

ON this and the pages next following will be found a directory of the various types of material handling machinery, miscellaneous sundry equipment for use in public warehouses, together with the names of the manufacturers.

The material handling machinery is alphabetically classified under both major and sub headings. In order to help the reader to understand the type of service for which certain classes of equipment are designed—which admittedly is difficult on account of the conflict of technical terms describing certain machines and operations—

explanations will be seen under major headings briefly setting forth certain information deemed of value in that connection; for example, the various uses to which that respective equipment may be put, sizes, capacities, type of power, etc.

It is believed that the miscellaneous equipment set forth is sufficiently well known to be self-explanatory and not requiring any special comment as to its application and use.

Every effort has been put forth to make this directory complete and accurate in each detail.

Adjustable Loading Chutes

(See Chutes, All Types.)

Air Hoists

(See Hoists, Pneumatic.)

Apron Conveyors

(See Conveyors, Apron.)

Automatic Elevators

(See Elevators, Freight and Passenger.)

Automobile Trucks

(See Motor Truck Specifications on page 44)

Bagging Devices

(See Conveyors, Portable.)

Barrel Elevators

(See Conveyors, Apron, Portable.)

Belt Conveyors

(See Conveyors, Belt.)

Bodies, Motor Truck

(See Truck Bodies, Motor.)

BODIES, VAN

Abresch Co., Chas., Milwaukee, Wis.
Babcock Co., H. H., Watertown, N. Y.
Biehls Wagon & Auto Body Works, Reading, Pa.
Blue Ribbon Body Co., Bridgeport, Conn.
Brooklyn Commercial Body Co., 470-74 Clermont Ave., Brooklyn, N. Y.
Bruder Co., Lawrence, Cincinnati, Ohio.
Champion Wagon Co., Owego, N. Y.
Clark Mfg. Co., J. L., Oshkosh, Wis.
Columbia Wagon & Body Co., Columbia, Pa.
Crane & Breed Mfg. Co., Cincinnati, Ohio.
Davenport Body Co., Davenport, Iowa.
Erdman-Guider Co., Saginaw, Mich.
Field Body Corp., Owosso, Mich.
Fitz Gibbon & Crisp, Trenton, N. J.
Geissel & Sons, A., Philadelphia, Pa.
General Woodwork Corp., Cincinnati, Ohio.
Greenfield Bus Body Co., Greenfield, Ohio.
Hannibal Truckbody Co., Hannibal, Mo.
Highland Body Mfg. Co., Cincinnati, Ohio.
Hoover Body Co., York, Pa.
Interboro Hoist & Body Corp., Long Island City, N. Y.
Kratzer Carriage Co., Des Moines, Iowa.
Lancaster Body Co., Lancaster, Pa.
Lang Body Co., 3088 W. 106th St., Cleveland, Ohio.
Metropolitan Body Co., Bridgeport, Conn.
Mulholland Co., Dunkirk, N. Y.
Providence Body Co., Providence, R. I.
Red Ball Transit Co., Indianapolis, Ind.
Hoeder Mfg. Co., Fred, 1396-1400 Atlantic Ave., Brooklyn, N. Y.
Rowe Motor Mfg. Co., Lancaster, Pa.
Schaefer Wagon Co., Gustav, 4180 Lorain Ave., Cleveland, Ohio.
Schubert Wagon Co., Oneida, N. Y.
Shadbolt Mfg. Co., 65 Flushing Ave., Brooklyn, N. Y.

Simplex Mfg. Co., Conneautville, Pa.
Springfield Body Co., Springfield, Mass.
Standard Commercial Body Corp., 423-31 E. 104th St., New York City.
Stoughton Wagon Co., Stoughton, Wis.
Tegetmeier & Riepe Co., 771-73 First Ave., New York City.
Troy Body Co., Troy, Ohio.
Wayne Works, Richmond, Ind.
Woonsocket Mfg. Co., Woonsocket, R. I.
York Body Corp., York, Pa.

Box Car Loaders

(See Conveyors, Apron, Bucket-Disc, Portable.)

Chain Blocks

(See Hoists, Chain.)

Chain Hoists

(See Hoists, Chain.)

Chain Conveyors

(See Conveyors, Bucket, Disc.)

CHUTES

Chutes may be straight, curved, spiraled, uniform, tapered or flaring, and are known as fixed, portable, swinging, telescoping, folding, etc. Adjustable loading and spiral are most common in warehouses.

Chutes, All Types

Alvey-Ferguson Co., Cincinnati, O.
Alvey Mfg. Co., St. Louis, Mo.
Buzz Engineering Co., Louisville, Ky.
Chain Belt Co., Milwaukee, Wis.
Dow Co., Louisville, Ky.
Grand Rapids Foundry Co., Grand Rapids, Mich.
Haslett Chute & Conveyor Co., Oaks, Pa.
Hendrick Mfg. Co., Carbondale, Pa.
Lamson Co., Syracuse, N. Y.
Link-Belt Co., 300 W. Pershing Rd., Chicago, Ill.
McNamara Bros. Co., Westport, Md.
Mathews Gravity Carrier Co., Pittsburgh, Pa.
N. P. Nelson Iron Works, 216 40th St., Brooklyn, N. Y.
New York Blower Co., Chicago, Ill.
Pennsylvania Foundry & Mfg. Co., Reading, Pa.
St. Paul Foundry Co., St. Paul, Minn.
Standard Conveyor Co., North St. Paul, Minn.
Turl Iron & Car Co., Inc., Newburgh, N. Y.

Continuous Elevators

(See Conveyors, Apron, Belt, etc.)

CONVEYORS

Conveying devices are more or less self-contained and transport material

horizontally or in a slightly inclined direction, as differentiating from those devices which carry material up a steep incline, and are known as elevators. Gravity is a common conveying force, though power may be used, such as electric, steam, pneumatic, or hydraulic. It is believed that the following classification of devices covers practically all the conveying operations in the warehouse field.

Conveyors, Apron

Either steel or wood aprons are used. Two parallel endless strands of chain pass around sprockets and carry the apron between or on them. Although a smooth surface is obtained in each case, the steel apron is composed of sections of flat, curved, abutted or overlapping metal plates, and the wood apron consists of narrow slats of wood.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Alvey Mfg. Co., St. Louis, Mo.
Alvey-Ferguson Co., Cincinnati, O.
Bailey-Burruss Mfg. Co., Atlanta, Ga.
C. O. Bartlett & Snow Co., French St., Cleveland, O.
Brown Hoisting Machinery Co., 4403 St. Clair Ave., N. E., Cleveland, O.
Buzz Engineering Co., Louisville, Ky.
Chain Belt Co., Milwaukee, Wis.
Dodge Mfg. Co., Mishawaka, Ind.
Dow Co., Louisville, Ky.
Farnham Mfg. Co., 39 Indiana St., Buffalo, N. Y.
General Conveyor & Mfg. Co., St. Louis, Mo.
Howe Chain Co., Muskegon, Mich.
Jeffrey Mfg. Co., Columbus, O.
Lamson Co., Syracuse, N. Y.
Link Belt Co., 300 W. Pershing Road, Chicago, Ill.
Meese & Gottfried Co., San Francisco.
N. P. Nelson Iron Works, 216 40th St., Brooklyn, N. Y.
Northwestern Electric Co., 408 S. Hoyne St., Chicago, Ill.
Standard Conveyor Co., North St. Paul, Minn.
Stearnes Conveyor Co., St. Clair Ave. and E. 290th St., Cleveland, O.
Webster Mfg. Co., 4500 Cortland St., Chicago, Ill.
Weller Mfg. Co., 1856 N. Kostner Ave., Chicago, Ill.

Conveyors, Belt

Belts are made in varying widths composed of fabric or rubber. Such conveyors may be operated horizontally or on a moderate incline, or may be changed

from horizontal to incline or the reverse in the course of a run.

Allis-Chalmers Mfg. Co., Milwaukee.
Alvey Mfg. Co., St. Louis, Mo.
Alvey-Ferguson Co., Cincinnati, O.
Bailey-Burruss Mfg. Co., Atlanta, Ga.
Barnard & Leas Mfg. Co., Moline, Ill.
C. O. Bartlett & Snow Co., French St., Cleveland, O.
Batavia Engineering Works, Batavia, Ill.
Bodinson Mfg. Co., San Francisco, Cal.
Bonnot Co., Canton, O.
Boston Belting Corp., 80 Elmwood Ave., Boston, Mass.
Brinkley Co., Seattle, Wash.
Brown Hoisting Machinery Co., 4403 St. Clair Ave., N. E., Cleveland, O.
Buzz Engineering Co., Louisville, Ky.
Chain Belt Co., Milwaukee, Wis.
Dodge Mfg. Corp., Mishawaka, Ind.
Dow Co., Louisville, Ky.
Farnham Mfg. Co., Buffalo, N. Y.
General Conveyor & Mfg. Co., St. Louis, Mo.
Haslett Chute & Conveyor Co., Oaks, Pa.
Hettrick Mfg. Co., Toledo, O.
Howe Chain Co., Muskegon, Mich.
Jeffrey Mfg. Co., Columbus, O.
Kennedy-Van Saun Mfg. & Eng. Corp., 50 Church St., New York City.
Lamson Co., Syracuse, N. Y.
Link-Belt Co., 300 W. Pershing Road, Chicago, Ill.
Marion Machine Foundry & Supply Co., Marion, Ind.
Mead-Morrison Mfg. Co., East Boston, Mass.
Meese & Gottfried Co., San Francisco, Cal.
Palmer-Bee Co., Detroit, Mich.
Portable Machinery Co., Clifton, N. J.
Pyott Co., 1401 W. North Ave., Chicago, Ill.
Robins Conveying Belt Co., 13 Park Row, New York City.
W. J. Savage Co., Knoxville, Tenn.
Schaffer Engineering & Equipment Co., Pittsburgh, Pa.
Smith Engineering Works, Milwaukee, Wis.
Specialty Engineering Co., Philadelphia, Pa.
Standard Conveyor Co., North St. Paul, Minn.
Stearnes Conveyor Co., St. Clair Ave. and E. 200th St., Cleveland, O.
Stebler Parker Co., Inc., Riverside, Cal.
Stephens-Adamson Mfg. Co., Aurora, Ill.
United Iron Works, Kansas City, Mo.
Webster Mfg. Co., 4500 Cortland St., Chicago, Ill.
Weller Mfg. Co., 1856 N. Kostner Ave., Chicago, Ill.
Wolf Co., Chambersburg, Pa.

Conveyors, Gravity Roller

Rollers are used to support the load and keep it moving at a uniform speed. They turn on fixed bearings and are spaced at various distances apart depending on the character and size of the material carried.

Alvey Mfg. Co., St. Louis, Mo.
Alvey-Ferguson Co., Cincinnati, O.
Buzz Engineering Co., Louisville, Ky.
Chicago Conveyor Co., 2416 W. 22d St., Chicago, Ill.
Dewey Supply Corp., 596 Broadway, New York City.
Dow Co., Louisville, Ky.
Farnham Mfg. Co., Buffalo, N. Y.
General Conveyor & Mfg. Co., St. Louis, Mo.
Haslett Chute & Conveyor Co., Oaks, Pa.
C. W. Hunt & Co., Inc., West New Brighton, N. Y.
Lamson Co., Syracuse, N. Y.
Link-Belt Co., 300 W. Pershing Rd., Chicago, Ill.
Mathews Gravity Carrier Co., Ellwood City, Pa.
Mead-Morrison Mfg. Co., East Boston, Mass.
Pittsburgh Conveying Machinery Co., Pittsburgh, Pa.
Standard Conveyor Co., North St. Paul, Minn.
Webster Mfg. Co., 4500 Cortland St., Chicago, Ill.

Conveyors, Portable

These may have an apron of belt or wood as the carrying surface, the complete mechanism being mounted on a frame which is carried on a wheeled body in such a way that the height of the discharge end can be varied. Also

known as wagon loaders, portable apron elevators, etc.

Acme Road Machinery Co., Frankfort, N. Y.
Alvey Mfg. Co., St. Louis, Mo.
Alvey-Ferguson Co., Cincinnati, O.
Augorcon Co., Inc., Passaic, N. J.
Barber-Greene, Aurora, Ill.
Bodinson Mfg. Co., San Francisco, Cal.
Burnett Mfg. Co., Los Angeles, Cal.
Chicago Automatic Conveyor Co., Old Colony Bldg., Chicago, Ill.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Dow Co., Louisville, Ky.
Farnham Mfg. Co., Buffalo, N. Y.
Godfrey Conveyor Co., Elkhart, Ind.
Geo. Haiss Mfg. Co., 145th St. and Canal Pl., New York City.
Jeffrey Mfg. Co., Columbus, O.
Joy Machine Co., Pittsburgh, Pa.
Edward L. Koenig & Co., 23 W. Kinzie St., Chicago, Ill.
Lamson Co., Syracuse, N. Y.
Link-Belt Co., 300 W. Pershing Rd., Chicago, Ill.
McKinney-Harrington Co., North Chicago, Ill.
Mailler Searles, Inc., San Francisco.
Moore Brothers, Chicago, Ill.
N. P. Nelson Iron Works, 216 40th St., Brooklyn, N. Y.
Portable Machinery Co., Passaic, N. J.
Standard Conveyor Co., North St. Paul, Minn.
Webster Mfg. Co., 4500 Cortland St., Chicago, Ill.

CRANES

While there are a variety of cranes with names too numerous to mention, it is felt that the following major types are best suited to the needs of the readers of this magazine: Gantry, Locomotive, Overhead Traveling, and Wall.

Cranes, Gantry

Gantrys are usually used outside of buildings to span tracks, etc. They may be fixed or moved on wheels which run on a track.

Alliance Machine Co., Alliance, O.
Alfred Box Co., Philadelphia, Pa.
Brown Hoisting Machinery Co., 4403 St. Clair Ave., N. E., Cleveland, O.
Case Crane & Engineering Co., Columbus, O.
Champion Engineering Co., Kenton, O.
Cleveland Crane & Engineering Co., Wickliffe, O.
Clyde Iron Works, Duluth, Minn.
Euclid Crane & Hoist Co., Euclid, O.
Lakeside Bridge & Steel Co., North Milwaukee, Wis.
McMyler Interstate Co., Cleveland, O.
Manning, Maxwell & Moore, Inc., 100 E. 42d St., New York City.
Milwaukee Electric Crane & Mfg. Co., Milwaukee, Wis.
Niles-Bement-Pond Co., 111 Broadway, New York City.
Northern Engineering Works, Detroit, Mich.
Ohio Locomotive Crane Co., Bucyrus, O.
Orton & Steinbrenner Co., 610 S. Dearborn St., Chicago, Ill.
Pawling & Harnischfeger Co., Milwaukee, Wis.
Toledo Crane Co., Bucyrus, O.
Wellman-Seaver-Morgan Co., E. 70th St. and Central Ave., Cleveland, O.
Whiting Corp., Harvey, Ill.

Cranes, Hand Power

Hand power cranes are often found to be great labor savers. The following manufacturers make various types ranging from a small portable unit to the overhead traveling model.

Barrett-Cravens Co., 1328 W. Monroe St., Chicago, Ill.
Alfred Box & Co., Philadelphia, Pa.
J. C. Busch Co., Milwaukee, Wis.
Case Crane & Engineering Co., Columbus, O.
Jas. H. Channon Mfg. Co., 227 W. Erie Ave., Chicago, Ill.
Cincinnati Iron & Steel Co., Cincinnati, O.
Cleveland Crane & Engineering Co., Wickliffe, O.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Detroit Hoist & Machine Co., Detroit, Mich.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.

Ederer Engineering Co., Seattle, Wash.
Euclid Crane & Hoist Co., Euclid, O.
Hoist & Crane Engineering Co., Liberty St., New York City.
Industrial Works, Bay City, Mich.
McMyler Interstate Co., Cleveland, O.
Manning, Maxwell & Moore, 100 E. 42d St., New York City.
Maris Bros., Philadelphia, Pa.
S. G. Milton & Son, Franklin, Pa.
New Jersey Foundry & Machine Co., 90 West St., New York City.
Niles-Bement-Pond Co., 111 Broadway, New York City.
N. B. Payne & Co., 25 Church St., New York City.
Roeper Crane & Hoist Co., Reading, Pa.
Toledo Crane Co., Bucyrus, O.
Yale & Towne Mfg. Co., Stamford, Conn.

Cranes, Locomotive

These are of the pillar type and travel on a track of standard or special gage, the boom being mounted on a turntable to permit of rotation. They are flexible and handle loads of great weight.

American Crane & Engineering Co., Toledo, O.
American Hoist & Derrick Co., St. Paul, Minn.
Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, O.
Browning Co., E. 162d St. and Waterloo Rd., N. E., Cleveland, O.
Bucyrus Co., Milwaukee, Wis.
Byers Machine Co., Ravenna, O.
Erie Steam Shovel Co., Erie, Pa.
Industrial Works, Bay City, Mich.
Koehring Co., Milwaukee, Wis.
McMyler Interstate Co., Cleveland, O.
Northwest Engineering Works, Green Bay, Wis.
Ohio Locomotive Crane Co., Bucyrus, O.
Orton & Steinbrenner Co., 610 S. Dearborn St., Chicago, Ill.
Osgood Co., Marion, O.
Pawling & Harnischfeger Co., Milwaukee, Wis.

Cranes, Overhead Traveling

Overhead traveling cranes, consisting of a girder structure, are supported on the ends by wheels which run in runways. A hoist is used in conjunction with a trolley to pick up, carry, and let down loads.

Alliance Machine Co., Alliance, O.
Alfred Box & Co., Philadelphia, Pa.
Brown Hoisting Machinery Co., 4403 St. Clair Ave., N. E., Cleveland, O.
Champion Engineering Co., Kenton, O.
Cleveland Crane & Engineering Co., Wickliffe, O.
Euclid Crane & Hoist Co., Euclid, O.
Hoist & Crane Engineering Co., Liberty St., New York City.
Lakeside Bridge & Steel Co., No. Milwaukee, Wis.
Manning, Maxwell & Moore, 100 E. 42d St., New York City.
Morgan Engineering Co., Alliance, O.
New Jersey Foundry & Machine Co., 90 West St., New York City.
Niles-Bement-Pond Co., 111 Broadway, New York City.
Northern Engineering Works, Detroit, Mich.
Northwest Engineering Co., Green Bay, Wis.
Pawling & Harnischfeger Co., Milwaukee, Wis.
Reading Chain & Block Co., Reading, Pa.
Roeper Crane & Hoist Works, Reading, Pa.
Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.
Shriver & Co., Harrison, N. J.
Valls Engineering Co., Columbus, O.

Crane Trucks

(See Trucks, Industrial.)

Cranes, Wall

Wall cranes, as the name implies, operate from a wall and may be stationary or movable. A bracket supports a trolley which extends out from the wall and from which a hoist operates.

Alliance Machine Co., Alliance, O.
Armington Engineering Co., Euclid, O.
Alfred Box & Co., Philadelphia, Pa.
Brown Hoisting Machinery Co., 4403 St. Clair Ave., N. E., Cleveland, O.
Case Crane & Engineering Co., Columbus, O.
Cleveland Crane & Engineering Co., Wickliffe, O.
Hoist & Crane Engineering Co., Liberty St., New York City.

Lakeside Bridge & Steel Co., North Milwaukee, Wis.
McMyler Interstate Co., Cleveland, O.
Manning, Maxwell & Moore, Inc., 100 E. 42d St., New York City.
Milwaukee Electric Crane & Mfg. Co., Milwaukee, Wis.
New Jersey Foundry & Machine Co., 90 West St., New York City.
Niles-Bement-Pond Co., 111 Broadway, New York City.
Northern Engineering Works, Detroit.
Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.
Vulcan Mfg. Co., Seattle, Wash.
Whiting Corp., Harvey, Ill.

Electric Motors
(See Equipment Section, page 36.)

Elevating Trucks, Hand
(See Trucks, Hand Elevating.)

Elevating Trucks, Industrial
(See Trucks, Industrial Elevating.)

ELEVATORS

Under this heading those devices are not included which are of a more strictly conveyor nature. The machines made by the manufacturers here listed can only be described as raising or lowering material in substantially a vertical direction. They are termed Elevators, and are classified as freight and passenger, and sidewalk.

Elevators, Freight and Passenger

Both traction and drum types are here set forth, the former—operated by electric, pneumatic or hydraulic power—being used for medium and high speed service, and the latter—operated by an electric motor—being for medium and low speed service.

A. B. See Electric Elevator Co., 52 Vesey St., New York City.
American Elevator & Machine Co., Louisville, Ky.
Burnett Mfg. Co., Los Angeles, Cal.
Jas. H. Curran Elevator Co., Cincinnati, O.
F. Grote Mfg. Co., Evansville, Ind.
Haughton Elevator & Machine Co., Toledo, O.
Houser Elevator Co., Syracuse, N. Y.
Kimball Bros., Council Bluffs, Iowa.
Llewellyn Iron Works, Los Angeles, Cal.
Otis Elevator Co., 11th Ave. and 26th St., New York City.
Pacific Elevator & Equipment Co., San Francisco, Cal.
Portland Elevator Co., Portland, Ore.
Jas. H. Roberts Elevator Co., 430 West Broadway, New York City.
Speidel Elevator Corp., Reading, Pa.
Spencer Elevator Co., San Francisco, Cal.
"B.C." Van Emon Elevator Co., San Francisco, Cal.
Warner Elevator Mfg. Co., Cincinnati, O.
Warsaw Elevator Co., Warsaw, N. Y.
Washington Elevator Co., Seattle, Wash.
W. J. Westbrook Elevator Co., Greensboro, N. C.

Elevators, Portable
(See Tying Machines.)

Elevators, Sidewalk

These are electric or hand driven and include the telescopic type for side posts.

Abell Elevator Co., Louisville, Ky.
Burnett Mfg. Co., Los Angeles, Cal.
Jas. H. Channon Mfg. Co., 227 W. Erie St., Chicago, Ill.
Chelsea Elevator Co., 439 West 19th St., New York City.
Cohoes Iron Foundry & Machine Co., Cohoes, N. Y.
J. H. Curran Elevator Co., Cincinnati, O.
Chas. E. Dowdall, 152 West Broadway, New York City.
Eastern Machinery Co., New Haven, Conn.
Edmonds Elevator Co., 519 Champlain Ave., Cleveland, O.
C. K. Ernst, Buffalo, N. Y.
Gillis & Geohagan, 527 West Broadway, New York City.
F. Grote Mfg. Co., Evansville, Ind.
Haughton Elevator & Machine Co., Toledo, O.
Houser Elevator Co., Syracuse, N. Y.

Kansas City Elevator Mfg. Co., Kansas City, Mo.
A. Kieckhefer Elevator Co., Milwaukee, Wis.
Kimball Bros. Co., Council Bluffs, Iowa.
Chas. E. Kohmetz, Rochester, N. Y.
Geo. T. McLaughlin Co., 120 Fulton St., Boston, Mass.
Marshall Bros., Pittsburgh, Pa.
Wm. A. Miller Machine Elevator Co., St. Louis, Mo.

Engines, Hoisting
(See Hoisting Engines.)

Flight Conveyors
(See Conveyors, Bucket, Disc.)

Freight Elevators
(See Elevators, Freight-Passenger.)

Gantry Cranes
(See Cranes, Gantry.)

Gasoline Hoisting Engines
(See Hoisting Engines.)

Gasoline Trucks
(See Trucks, Elevating Industrial.)

Gasoline Tractors
(See Tractors, Industrial.)

Gravity Roller Conveyors
(See Conveyors, Gravity Roller.)

Gravity Spiral Conveyors
(See Chutes, All Types.)

Hand Hoists
(See Hoists, Chain, Pneumatic.)

Hand Lift Trucks
(See Trucks, Hand Elevating.)

Hand Trucks
(See Trucks, Hand.)

Hoists, Air
(See Hoists, Pneumatic.)

HOISTS

Four main divisions will be made of this type of material handling machinery; namely, Chain Hoists, Monorail Hoists, Pneumatic Hoists, and Hoisting Engines.

Hoists, Chain

Chain hoists, either hand or electric, are used for small or moderate loads, for short lifts, and for intermittent service.

Abell-Howe Co., 1406 S. Michigan Ave., Chicago, Ill.
Boston & Lockport Block Co., East Boston, Mass.
Alfred Box & Co., Philadelphia, Pa.
Jas. H. Channon Mfg. Co., 227 W. Erie St., Chicago, Ill.
Chisholm Moore Mfg. Co., 5046 Lakeside Ave., Cleveland, O.
Detroit Hoist & Machine Co., Detroit, Mich.
Euclid Crane & Hoist Co., Euclid, O.
Ford Chain Block Co., Philadelphia, Pa.
Harrington & Co., Philadelphia, Pa.
Hobbs, Cline & Co., 37 Pearl St., Boston, Mass.
Hoist & Crane Engineering Co., Liberty St., New York City.
Irving Mfg. & Tool Co., 157 Chambers St., New York City.
Maris Bros., Philadelphia, Pa.
Franklin Moore Co., Winsted, Conn.
Herbert Morris, Inc., Buffalo, N. Y.
New Jersey Foundry & Machine Co., 90 West St., New York City.
Reading Chain & Block Corp., Reading, Pa.
Sprague Electric Works, 527 W. 34th St., New York City.
Wright Mfg. Co., Lisbon, O.
Yale & Towne Mfg. Co., Stamford, Conn.

Hoists, Monorail

Monorail hoists, often called tramway or tramrail hoists, transporters, and man trolleys, are simply hoists which run along a one-rail overhead track, the hoist of course being capable of vertical motion through the medium of chain or wire rope lifts.

Brown Hoisting Machinery Co., 4403 St. Clair Ave., N. E., Cleveland, O.
Chisholm Moore Mfg. Co., 5046 Lakeside Ave., Cleveland, O.
Cleveland Crane & Engineering Co., Wickliffe, O.
Detroit Hoist & Machine Co., Detroit, Mich.
Euclid Crane & Hoist Co., Euclid, O.
Erie Hoist Co., Erie, Pa.
Ford Chain Block Co., Philadelphia, Pa.

Hanna Engineering Works, 1764 Elston St., Chicago, Ill.
Joshua Hendy Iron Works, San Francisco, Cal.
Hoisting Machinery Co., 50 Church St., New York City.
Link-Belt Co., 300 West Pershing Rd., Chicago, Ill.
Maine Electric Co., Portland, Me.
Manning, Maxwell & Moore, Inc., 100 E. 42d St., New York City.
Maris Bros., Philadelphia, Pa.
Northern Engineering Works, Detroit, Mich.
Ottumwa Iron Works, Ottumwa, Iowa.
Pawling & Harnischfeger Co., Milwaukee, Wis.
Reading Chain & Block Corp., Reading, Pa.
Roeper Crane & Hoist Co., Reading, Pa.
Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.
Van Dorn Iron Works Co., Cleveland, O.
Wright Mfg. Co., Lisbon, O.
Yale & Towne Mfg. Co., Stamford, Conn.

Hoists, Pneumatic

In principle these consist of a cylinder through which operates a piston controlled by air, and where greater lifts are desired than the height of the cylinder, sheaves are used over which the lifting rope is made to pass.

Chicago Pneumatic Tool Co., 6 E. 44th St., New York City.
Chisholm Moore Mfg. Co., Cleveland, O.
Curtis Pneumatic Machinery Co., St. Louis, Mo.
Hanna Engineering Works, 1764 Elston St., Chicago, Ill.
Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago, Ill.
Ingersoll-Rand Co., 11 Broadway, New York City.
J. George Leyner Engineering Works, Littleton, Colo.
Rix Compressed Air & Drill Co., San Francisco, Cal.
Smith, Drum & Co., Philadelphia, Pa.
Yale & Towne Mfg. Co., Stamford, Conn.

Hoisting Engines

Hoisting engines operate by steam, air, gasoline, kerosene, or oil, and hoist or haul through the medium of a winch consisting of one or more drums.

Clyde Iron Works, Duluth, Minn.
Dake Engine Co., Grand Haven, Mich.
Erie Hoist Co., Erie, Pa.
S. Flory Mfg. Co., Bangor, Pa.
Insley Mfg. Co., Indianapolis, Ind.
Lidgerwood Mfg. Co., 96 Liberty St., New York City.
Mead-Morrison Mfg. Co., East Boston, Mass.
J. S. Mundy Hoisting Engine Co., Newark, N. J.
National Hoisting Engine Co., Harrison, N. J.
O. K. Clutch & Machinery Co., Columbia, Pa.

Jib Cranes

(See Cranes, Wall.)

Loaders, Box Car
(See Conveyors, Portable.)

Loaders, Truck and Wagon
(See Conveyors, Portable.)

Locomotive Cranes
(See Cranes, Locomotive.)

Motors, Electric
(See Equipment Section, beginning on page 36.)

Motor Truck Bodies
(See Bodies, Van.)

Motor Truck Trailers
(See Trailers, Motor Truck.)

Package Elevators
(See Conveyors, Apron, Belt, Portable and Tying Machines.)

Pan Conveyors
(See Conveyors, Bucket, Disc.)

Piano Trucks
(See Trucks, Industrial Elevating, Hand Elevating.)

Piling Machines
(See Conveyors, Portable and Tying Machines.)

Platform Conveyors
(See Conveyors, Apron.)

Pneumatic Hoists
(See Hoists, Pneumatic.)

Portable Conveyors
(See Conveyors, Portable.)

Portable Elevators
(See Conveyors and Tying Machines.)

Sidewalk Elevators

(See Elevators, Sidewalk.)

Slat Conveyors

(See Conveyors, Bucket, Disc.)

Spiral Chutes

(See Chutes, All Types.)

Stacking Machines

(See Conveyors, Portable.)

Storage Batteries

(See Equipment Section next following.)

Tackle Blocks

(See Hoists, Chain.)

Telescopic Hoists

(See Elevators, Sidewalk.)

Telphers

(See Hoists, Monorail.)

Tiering Machines

These, also known as portable elevators, are used to elevate heavy package, barrel, or similar material in a vertical direction on a moving platform.

Alvey-Ferguson Co., Cincinnati, O.
Barrett-Cravens Co., 1328 W. Monroe St., Chicago, Ill.
Economy Engineering Co., 2635 West Van Buren St., Chicago, Ill.
Lewis-Shepard Co., 568 East First St., Boston.
New Jersey Foundry & Machine, 90 West St., New York City.
Revolator Co., Jersey City, N. J.
Standard Conveyor Co., No. St. Paul.

TRACTORS

Only tractors of the industrial type, i.e., those designed to pull industrial trailers, are here set forth, and while a certain number are gasoline driven, most of them are propelled by an electric storage battery.

Tractors, Industrial

Atlas Car & Mfg. Co., Cleveland, O.
Automatic Transportation Co., Buffalo.
Baker R & L Co., 2180 W. 25th St., Cleveland, O.
Barrett-Cravens, 1325 W. Monroe St., Chicago, Ill.
Binghamton Electric Truck Co., Binghamton, N. Y.
Cleveland Tractor Co., Cleveland, O.
Cowan Truck Co., Holyoke, Mass.
Crescent Truck Co., Lebanon, Pa.
Elwell-Parker Electric Co., Cleveland, O.
Kilbourne & Jacobs Co., Columbus, O.
Lakewood Engineering Co., Cleveland.
Mercury Mfg. Co., 4108 No. Halsted St., Chicago, Ill.
Townmotor Co., Cleveland, O.
Yale & Towne Mfg. Co., Stamford, Conn.
Yuba Mfg. Co., San Francisco, Cal.

TRAILERS

Trailers, Industrial Truck

Trailers of the following types are made by these manufacturers, classified according to method of steering: four-wheel steer, caster, balanced, and fifth-wheel steer. Some are reversible, since they can be drawn from either end.

Abell-Howe Co., 1406 So. Michigan Ave., Chicago, Ill.
Arcadia Trailer Corp., Newark, N. Y.
Automatic Transportation Co., Buffalo.
Biehl Iron Works, Inc., Reading, Pa.
Binghamton Electric Truck Co., Binghamton, N. Y.
George P. Clark Co., Windsor Locks, Conn.
Cowan Truck Co., Holyoke, Mass.
Crescent Truck Co., Lebanon, Pa.
Equipment Mfg. Co., Cleveland, O.
Fairbanks Co., 416 Broome St., New York City.
Howe Chain Co., Muskegon, Mich.
Edward L. Koenig & Co., 23 W. Kinzie St., Chicago.
Lakewood Engineering Co., Cleveland.
Lansing Co., Lansing, Mich.
Michigan Truck & Lumber Co., Holly, Mich.
A. Streich & Bro. Co., Oshkosh, Wis.
West Bend Equipment Co., West Bend, Wis.
Yale & Towne Mfg. Co., Stamford, Conn.

Trailers, Motor Truck

Three types of motor truck trailers

are most used by warehousemen; namely, four-wheel, two-wheel, and semi-trailer. Both the four-wheel and semi-trailer types have straight and drop frames, and the two-wheel type is classified as light or heavy. Almost any type of body can be mounted on the four-wheel trailer and many different types on the semi-trailer and the two-wheel trailer.

Arcadia Trailer Corp., Newark, N. Y.
Automotive Trailer Corp., Springfield, Ill.
Auto Safety Signal Co., Owego, N. Y.
Auto Trailer Co., Los Angeles, Cal.
Biggam Trailer Co., Milwaukee, Wis.
Bower Mfg. Co., Fowler, Ind.
Chenango Equip. Mfg. Co., Norwich, N. Y.
Curtis Trailer Co., Minneapolis, Minn.
Defiance Carriage Co., Defiance, O.
Delker Co., Henderson, Ky.
Detroit Trailer Co., Detroit, Mich.
Diamond Carriage Co., Spokane, Wash.
E. & W. Co., Cedarburg, Wis.
Eadie Trailer Corp., New York City.
Electric Wheel Co., Quincy, Ill.
Feigelson, Alex., Beaumont, Tex.
Flexible Mfg. Co., Loudenville, O.
Fruehauf Trailer Co., Detroit, Mich.
General Woodwork Corp., Cincinnati, O.
Hesse Mfg. Co., Leavenworth, Kan.
Hewitt-Ludlow Auto Co., San Francisco.
Highway Trailer Co., Edgerton, Wis.
Holland Trailer Co., Detroit, Mich.
Hoof Mfg. Co., Plato, Minn.
King Trailer Co., Ann Arbor, Mich.
Lapeer Trailer Co., Lapeer, Mich.
Lee Trailer & Body Co., Chicago, Ill.
Lyons Iron Works, Manchester, N. H.
Martin Rocking Fifth Wheel Co., Springfield, Mass.
Martin Truck & Body Corp., York, Pa.
Miami Trailer Co., Troy, O.
Miles Mfg. Co., Jackson, Mich.
Omaha Steel Works, Omaha, Neb.
Reedy Auto Truck & Trailer Co., Tulsa, Okla.
Reliance Trailer & Truck Co., San Francisco, Cal.
Samson Trailer Works, Grand Rapids, Mich.
Schaefer Wagon Co., Cleveland, O.
Shadbolt Mfg. Co., Brooklyn, N. Y.
Shaver Carriage & Auto Co., Des Moines, Iowa.
Springfield Commercial Body Co., Springfield, Mass.
Standard Trailer Co., Cambridge Springs, Pa.
Texas Body & Trailer Co., Houston, Tex.
Trail-Ford Corp., Ann Arbor, Mich.
Trailer-Truck Co., Nashotah, Wis.
Trailmobile Co., Cincinnati, O.
Troy Trailer & Wagon Co., Troy, O.
Union Trailer Works, Boonville, N. Y.
Utility Trailer Mfg. Co., Los Angeles, Cal.
Warner Mfg. Co., Beloit, Wis.
Whitehead & Kales Co., Detroit, Mich.
Wolverine Trailer Equipment Co., Detroit, Mich.

Trolleys

(See Hoists, Monorail.)

TRUCKS

The manufacturers of both hand and industrial trucks are here represented. The hand types may be defined as those which are propelled and steered by the operator walking along with them, either pushing them in front of him, or pulling them behind him, and classified as hand and hand elevating. The industrial type, storage battery operated, are four-wheeled, designed to carry a load and classified according to the specific service they perform, such as elevating, tiering, etc.

Truck Bodies

(See Bodies, Van.)

Trucks, Hand

Various types are made by these manufacturers, including the two-wheeled stevedore, four-wheel platform, two-wheel platform, dolly, and specialty models.

Armstrong Truck Co., North Wales, Pa.
Barrett-Cravens Co., 1328 W. Monroe St., Chicago, Ill.
George P. Clark Co., Windsor Locks, Conn.

Clark Equipment Co., Buchanan, Mich.
Crerar Adams & Co., 259 West Erie St., Chicago, Ill.
Josiah Cummings & Son, 653 Atlantic Ave., Boston, Mass.
Equipment Mfg. Co., Leader-News Bldg., Cleveland, O.
Fairbanks Co., 416 Broome St., New York City.
Fairbanks, Morse & Co., Chicago, Ill.
Z. F. Fox & Son, Freeport, Mich.
Globe Vise & Truck Co., Grand Rapids.
G. Grote Mfg. Co., Evansville, Ind.
Howe Chain Co., Muskegon, Mich.
Howe Scale Co. of New York, 341 Broadway, New York City.
Hubbard Pressed Steel Co., Niles, O.
Kilbourne & Jacobs Co., Columbus, O.
Edward L. Koenig & Co., 23 W. Kinzie St., Chicago.
Ladel Mfg. Co., New Philadelphia, O.
Lansing Co., Lansing, Mich.
Lewis-Shepard Co., 568 E. First St., Boston.
Michigan Truck & Lumber Co., Holly, Mich.
Morris Truck & Wheel Co., Philadelphia, Pa.
Nutting Truck Co., Faribault, Minn.
St. Louis Truck & Mfg. Co., St. Louis.
Sharon Pressed Steel Co., Sharon, Pa.
Standard Improved Truck Co., 20 West Jackson Blvd., Chicago, Ill.
Standard Scale & Supply Co., Pittsburgh, Pa.
A. Streich & Brothers Co., Oshkosh, Wis.
Tucker & Dorsey Mfg. Co., Indianapolis.
Warren Mfg. Co., Springfield, Mass.
West Bend Equipment Co., West Bend, Wis.
Yale & Towne Mfg. Co., Stamford, Conn.
Zering Mfg. Co., Cincinnati, O.

Trucks, Hand Elevating

Action is similar to that of the industrial elevating type in that the truck is slid under the load and lifted to enable it to be drawn away.

Barrett-Cravens, 1328 W. Monroe St., Chicago, Ill.
Cowan Truck Co., Holyoke, Mass.
Edward L. Koenig & Co., 23 W. Kinzie St., Chicago.
Lewis-Shepard Co., South Boston, Mass.
National Scale Corp., Chicopee Falls, Mass.
Plimpton Truck Co., Stamford, Conn.
Stuebing Truck Co., Cincinnati, O.
Self Lifting Piano Truck Co., Findlay, O.
Sturdi-Truck Co., Inc., Wilmington.
John J. Towsley Mfg. Co., Cincinnati.
Transmission Ball Bearing Co., Inc., Buffalo, N. Y.

Trucks, Industrial Elevating

Since a lower forward extension is electrically operated to run under skid platforms, loads are electrically elevated, taken away, lowered, and left in the desired location.

Anderson Electric Car Co., Detroit, Mich.
Atlas Car & Mfg. Co., Cleveland, O.
Automatic Transportation Co., Buffalo, N. Y.
Binghamton Electric Truck Co., Binghamton, N. Y.
Couple Gear Electric Truck Co., Grand Rapids, Mich.
Cowan Truck Co., Holyoke, Mass.
Crescent Truck Co., Lebanon, Pa.
Elwell-Parker Electric Co., Cleveland, O.
Hoagland Thayer, Inc., Newark, N. J.
Karry Lode Industrial Truck Co., 100 Nott Ave., Long Island City, N. Y.
Lakewood Engineering Co., Cleveland, O.
Mercury Mfg. Co., Chicago, Ill.
Terminal Engineering Co., 17 W. 44th St., New York City.
Yale & Towne Mfg. Co., Stamford, Conn.

Trucks, Motor

(See Specifications, page 44.)

Trucks, Tiering

These are of the industrial type, and by means of a high upright frame with proper platform connections, loads can be elevated to a height of several feet and tiered as desired.

Automatic Transportation Co., Buffalo.
Baker R & L Co., Cleveland, O.
Cowan Truck Co., Holyoke, Mass.
Crescent Truck Co., Lebanon, Pa.
Elwell-Parker Electric Co., Cleveland.

Lakewood Engineering Co., Cleveland.
Lewis-Shepard Co., Boston.
Standard Conveyor Co., North St. Paul,
Minn.
Terminal Engineering Co., 17 West 44th
St., New York City.
Yale & Towne Mfg. Co., Stamford, Conn.

Van Bodies

(See Bodies, Van.)

Wagon Loaders

(See Conveyors, Portable.)

Wall Cranes

(See Cranes, Wall.)

WHEELBARROWS**Wheelbarrows**

As most of the various types are made by each of these manufacturers, it is felt that it is needless to classify them but list the manufacturers under one general heading.

American Steel Scraper Co., Sidney, O.
Ashboro Wheelbarrow Co., Ashboro,
N. C.
Bryan Mfg. Co., Bryan, O.

Chattanooga Wheelbarrow Co., Chat-
tanooga, Tenn.
Fairbanks Co., 416 Broome St., New
York City.

W. B. Harrison & Co., Fresno, Cal.
Inland Mfg. Co., Fresno, Cal.
Kilbourne & Jacobs Co., Columbus, O.
McWhinnie, Thos., Poughkeepsie, N. Y.
Puffer-Hubbard Mfg. Co., Minneapolis.
Ross Bros. Co., Worcester, Mass.
Syracuse Chilled Plow Co., Syracuse,
N. Y.

D. F. Tanner, Holland, N. Y.
Toledo Wheelbarrow Co., Toledo, O.

Winches, Hoisting

(See Hoisting Engines.)

Miscellaneous Warehouse Equipment Section

With which is incorporated a list of Warehouse Architects and Engineers

Alarms, Fire

American Fire Alarm Co., Pittsburgh,
Pa.
Anderson Coupling & Fire Supply Co.,
Kansas City, Kan.
Automatic Fire Alarm Co., Bradford,
Pa.
Boston Automatic Fire Alarm Co., 141
Milk St., Boston, Mass.
Electric Fire Alarm Co., Sheboygan,
Wis.
Federal Sign System (Electric), 8700
S. State St., Chicago, Ill.
Gamewell Fire Alarm Telegraph Co.,
Newton Upper Falls, Mass.
Ideal Fire Detector Co., Newark, N. J.
McFell Signal Co., 2837 S. Halsted St.,
Chicago, Ill.
W. R. Ostrander & Co., 371 Broadway,
New York City.
Patrick & Wilkins Co., Philadelphia,
Pa.
Rex-Harris Fire Appliance Co., 310 W.
39th St., New York City.
Russell Elec. Co., Danbury, Conn.
Samson Electric Co., Canton, Mass.
Special Fire Alarm Electric Signal Co.,
44 E. 23d St., New York City.
Standard Electric Time Co., Springfield,
Mass.
U. S. Automatic Fire Alarm Co., Kansas
City, Mo.

Architects and Building Engineers

Aberthaw Construction Co., 27 School
St., Boston.
Arnold Co., 105 S. La Salle St., Chicago,
Ill.
Ballinger Co., Philadelphia, Pa.
Black Hawk Construction Co., Water-
loo, Iowa.
Blair Engineering Co., 343 S. Dearborn
St., Chicago, Ill.
Frank D. Chase, 645 N. Michigan Ave.,
Chicago, Ill.
Day & Zimmerman, Philadelphia, Pa.
J. B. Ferguson Co., Hagerstown, Md.
Ford, Bacon & Davis, 115 Broadway,
New York City.
Daniel J. Hauer, Baltimore, Md.
D. P. Hoag & Co., Minneapolis, Minn.
K. L. Hullsick, Norfolk, Va.
George S. Kinsley, 109 N. Dearborn St.,
Chicago, Ill.
Moores & Dunford, 110 East 42d St.,
New York City.
Noice & Merrill, Los Angeles, Cal.
Osborn Engineering Co., 2848 Prospect
Ave., Cleveland, O.
Ramp Buildings, Inc., 115 Broad St.,
New York City.
Salmond Scrimshaw & Co., Arlington,
N. J.
Smith & Annable, Inc., Springfield, Mass.
Ralph Sollitt & Sons, Chicago, Ill.
Stone & Webster, Boston, Mass.
Thompson & Binger, Syracuse, N. Y.
Turner Construction Co., 244 Madison
Ave., New York City.
Van Gunten & Van Gunten, 26 E. Huron
St., Chicago, Ill.
Widmer Engineering Co., St. Louis, Mo.
Clarence E. Wunder, Philadelphia, Pa.

Baled Excelsior

(See Pads, Excelsior.)

Baskets, Moving

Burlington Basket Co., Burlington, Ia.
Butler Basket Co., Butler, Ind.
Farmers' Mfg. Co., Norfolk, Va.
Wm. A. Iden Co., 564 Washington Blvd.,
Chicago, Ill.
New Albany Box & Basket Co., New
Albany, Ind.
Peru Basket Co., Peru, Ind.

Portland Basket & Handle Co., Port-
land, Ore.
Steel Basket Co., Cedar Rapids, Ia.
Watson Mfg. Co., Jamestown, N. Y.
Webster Basket Co., Rochester, N. Y.
Wheeling Corrugating Co., Wheeling,
W. Va.
Wickwire Spencer Steel Corp., 41 E.
42d St., New York City.
Wire Goods Co., Worcester, Mass.
Wire Hardware Co., 6126 S. La Salle St.,
Chicago, Ill.
Woods-Sherwood Co., Worcester, Mass.

Batteries, Storage

Acme Storage Battery Corp., Pough-
keepsie, N. Y.
American Storage Battery Co., Boston,
Mass.
Arthur Storage Battery Supply Co., 2540
Cottage Grove Ave., Chicago, Ill.
Atlas Electric Storage Battery Co.,
Greenville, Mich.
Bison Storage Battery Co., Buffalo, N. Y.
Cincinnati Storage Battery Co., Cin-
cinnati, O.
Cole Storage Battery Co., 2433 Indiana
Ave., Chicago, Ill.
Cooper Storage Battery Mfg. Co., Cin-
cinnati, O.
Edison Storage Battery Co., Orange,
N. J.
Electric Storage Battery Co., Philadel-
phia, Pa.
General Storage Battery Co., St. Louis,
Mo.
Gillard Storage Battery Co., Detroit,
Mich.
Gould Storage Battery Co., 30 E. 42d St.,
New York City.
Hoosier Storage Battery Co., Evans-
ville, Ind.
Lyons Storage Battery Co., Inc., Phila-
delphia, Pa.
McCauly Storage Battery Co., 1060 St.
Clair St., Cleveland, O.
Mack Storage Battery Co., Detroit.
Michigan Storage Battery Co., Detroit,
Mich.
Miller Storage Battery Co., Toledo, O.
Multiple Storage Battery Co., 350 Mad-
ison Ave., New York City.
Perfection Storage Battery Co., 500 E.
40th St., Chicago, Ill.
Philadelphia Storage Battery Co., Phila-
delphia, Pa.
Stewart Storage Battery Co., Marshfield,
Wis.
United States Light & Heat Corp.,
Niagara Falls, N. Y.

Box Strapping Machines

Acme Steel Goods Co., 2840 Archer Ave.,
Chicago, Ill.
American Box Strapping Co., Inc., 275
Water St., New York City.
American Steel Band Co., Pittsburgh,
Pa.
American Steel & Wire Co., 208 So.
La Salle St., Chicago, Ill.
Cary Mfg. Co., Nassau and Jay Sts.,
Brooklyn, N. Y.
DeHaven Mfg. Co., 50 Columbia Heights,
Brooklyn, N. Y.
L. F. Grammes & Sons, Allentown, Pa.
Harvey Spring & Forging Co., Racine,
Wis.
Hollow Cable Mfg. Co., Hornell, N. Y.
Independent Metal Strap Co., 56 Prince
St., New York City.
W. F. Robertson Steel & Iron Co., Cin-
cinnati, O.
Sidnode System, Inc., 33 Union Sq. W.,
New York City.
N. Smith & McCorken, Inc., 64 Engst
Ave., Brooklyn, N. Y.
Stanley Works, New Britain, Conn.

It-It Machines Co., San Francisco, Cal.
Twisted Wire & Steel Co., 437 Eleventh
Ave., New York City.
U. S. Steel & Wire Co., Newark, N. J.
Wire & Steel Products Co., Inc., 421 E.
22d St., New York City.

Building Engineers

(See Architects and Building Engs.)

Cabinets, Storage

(See Storage Racks.)

Canvas Covers

(See Tarpaulins.)

Canvas Pads

(See Pads, Furniture.)

Carpet Cleaning Equipment

George Gary & Son, Athol, Mass.
Chief Mfg. Co., Indianapolis, Ind.
Cleveland Laundry Machine Co., 5184
Fowler Ave., S. E., Cleveland, O.
Electric Rotary Machine Co., 3825 W.
Lake St., Chicago, Ill.
Giant Mfg. Co., Council Bluffs, Iowa.
Reed Mfg. Co., Springfield, O.
United Vacuum Appliance Corp., Con-
nersville, Ind.

Casters, Truck

Armstrong Truck Co., North Wales,
Pa.
Bassick Co., Bridgeport, Conn.
Bond Foundry & Machine Co., Manheim,
Pa.
Buffalo Pulley & Caster Co., Inc., Buf-
falo, N. Y.
Geo. P. Clark Co., Windsor Locks,
Conn.
Divine Brothers Co., Utica, N. Y.
Equipment Mfg. Co., Leader News Bldg.,
Cleveland, O.
Fairbanks Co., 416 Broome St., New
York City.
Hamilton Caster Mfg. Co., Hamilton, O.
Edward L. Koenig & Co., 23 W. Kinzie
St., Chicago.
Lansing Co., Lansing, Mich.
Morris Truck & Wheel Corp., Inc.,
Philadelphia, Pa.
Reading Hardware Co., Reading, Pa.
Sargent & Co., New Haven, Conn.
Warren Mfg. Co., Springfield, Mass.
H. Zering Mfg. Co., Cincinnati, O.

Cedar Paper

(See Insecticides.)

Clocks, Time

Automatic Time Stamp Co., 164 Con-
gress St., Boston, Mass.
Boston Time Stamp Co., 136 Washing-
ton St., Boston, Mass.
W. H. Bundy Recording Co., 135 Fifth
Ave., New York City.
Cincinnati Time Recorder Co., Cincin-
nati, O.
Costmeter Co., 295 Franklin St., Boston,
Mass.
Howard E. Clock Co., Bromfield &
Washington Sts., Boston, Mass.
International Time Recording Co. of
New York, Endicott, N. Y.
Pacific Electric Clock Co., San Fran-
cisco, Cal.
Simplex Time Recorder Co., Gardner,
Mass.
Stromberg Electric Co., 209 W. Jackson
Blvd., Chicago, Ill.

Covers, Piano

(See Pads, Furniture.)

Cushion Wheels

(See Wheels, Cushion Motor Truck.)

Doors, Fire

Allith-Prouty Co., Danville, Ill.
Art Metal Fire Proof Door & Trim Co.,
2732 Wentworth Ave., Chicago, Ill.
Buffalo Fireproof Co., Buffalo, N. Y.
Coburn Trolley Track Mfg. Co., 10 E.
43d St., New York City.
Cornell Iron Works, 26th St. and
Eleventh Ave., New York City.
Fort Pitt Steel & Iron Works, Pitts-
burgh, Pa.
Jamison Cold Storage Door Co., Hagers-
town, Md.
J. Edward Ogden Co., 147 Cedar St.,
New York City.
Peelle Co., Stewart Ave. and Harrison
Pl., Brooklyn, N. Y.
Pennsylvania Seaboard Steel Corp.,
Philadelphia, Pa.
Perkins Mfg. Co., St. Paul, Minn.
Harris Preble Door Co., 2424 W. 22d
St., Chicago, Ill.
Richards Wilcox Mfg. Co., Aurora, Ill.
Richmond Fireproof Door Co., Rich-
mond, Ind.
F. P. Smith Wire & Iron Works, 2340
Clybourn Ave., Chicago, Ill.
Stevensons Cold Storage Door Co.,
Chester, Pa.
Variety Fire Door Co., 2958 Carroll
Ave., Chicago, Ill.
Vulcan Rail & Mfg. Co., Maspeth, L. I.,
N. Y.

Excelsior Pads

(See Pads, Excelsior.)

Extinguishers, Fire

Badger Fire Extinguisher Co., San
Francisco, Cal.
Buffalo Chemical Fire Extinguisher Co.,
Buffalo, N. Y.
Columbia Fire Extinguisher Co., 174
Centre St., New York City.
Diener Mfg. Co., 400 Monticello Ave.,
Chicago, Ill.
Fire Protection Co., San Francisco, Cal.
Foamite-Childs Corp., Utica, N. Y.
Globe Automatic Sprinkler Co., Phila-
delphia, Pa.
Gorham Fire Apparatus Co., San Fran-
cisco, Cal.
S. F. Hayward & Co., 250 West 54th St.,
New York City.
Johns-Manville, Inc., Madison Ave. at
41st St., New York City.
Miller-Perless Mfg. Co., 325 N. Curtis
St., Chicago, Ill.
Pyrene Mfg. Co., Newark, N. J.
M. L. Snyder & Son, Philadelphia, Pa.

Fire Alarms

(See Alarms, Fire.)

Fire Doors

(See Doors, Fire.)

Fire Extinguishers

(See Extinguishers, Fire.)

Fire Sprinklers

(See Sprinklers, Fire.)

Furniture Pads

(See Pads, Furniture.)

Furniture Polish

(See Polish, Furniture.)

Hampers

(See Baskets, Moving.)

Hand Truck Casters

(See Casters, Truck.)

Insecticides

Barrett Chemical Co., 233 37th St.,
Brooklyn, N. Y.
Botanical Mfg. Co., Philadelphia, Pa.
Chemical Supply Co., 2450 Canal Rd.,
Cleveland, O.
California Exterminating Co., 121 Man-
hattan St., New York City.
Colonial Chemical Co., Reading, Pa.
Cremoline Disinfecting Co., St. Louis,
Mo.
H. C. Dusenberry, Inc., 95 Gold St.,
New York City.
Enoz Chemical Co., 705 No. Wells St.,
Chicago, Ill.
Alex. Ferguson Co., Philadelphia, Pa.
Flash Chemical Co., Cambridge, Mass.
Felix Girard Co., Inc., Minneapolis,
Minn.
Glidden Co., Madison Ave. and Berea
Rd., Cleveland, O.
James Good, Inc., Philadelphia, Pa.
Grasselli Chemical Co., Guardian Bldg.,
Cleveland, O.
Guarantee Exterminating Co., 500 Fifth
Ave., New York City.
Hockwald Chemical Co., San Francisco,
Cal.
Adolph Isaacson & Sons, 74 Fulton St.,
New York City.
Insecticide Co., San Francisco, Cal.
Leggett & Bros., 301 Pearl St., New
York City.

Lewey Chemical Co., 85 W. 15th St.,
New York City.
Plunkett Chemical Co., 2540 Cottage
Grove Ave., Chicago, Ill.
Rath Mfg. Co., Philadelphia, Pa.
Ratin Laboratory, 115 Broad St., New
York City.
Rolheim Co., Philadelphia, Pa.
Standard Chemical Co., 728 Frankfort
Ave., Cleveland, O.
Virus Co., 121 W. 15th St., New York.
E. S. Wells, Jersey City, N. J.
White Tar Co., 56 Vesey St., New York.

Machine Saws

(See Saws, Machine.)

Mileage Recorders, Motor Truck.

American Taximeter Co., New York
City.
Brown Trafflog Co., Cleveland, O.
S. H. Hogson & Co., New York City.
Jones Speedometer Co., Brooklyn, N. Y.
Service Recorder Co., 710 Huron Rd.,
Cleveland, O.

Moth Bags

(See Insecticides.)

Moth Balls

(See Insecticides.)

Motor Suits

(See Work Suits.)

Motors, Electric

Calumet Motor Co., Lake Linden, Mich.
Century Electric Co., St. Louis, Mo.
Crocker-Wheeler Co., Ampere, N. J.
Cushman Electric Co., Concord, N. H.
Diehl Mfg. Co., Elizabeth, N. J.
Eck Dynamo & Motor Co., Belleville,
N. J.
Electric Controller & Mfg. Co., Cleve-
land, O.
General Electric Co., Schenectady, N. Y.
Howell Electric Motors Co., Howell,
Mich.
Kimble Electric Co., 634 North Western
Ave., Chicago, Ill.
Ohio Electric & Controller Co., 5900
Maurice Ave., Cleveland, O.
Robbins & Myers Co., Springfield, O.
Wagner Electric Mfg. Co., St. Louis,
Mo.
Western Electric Co., 100 E. 42d St.,
New York City.
Westinghouse Electric & Mfg. Co., East
Pittsburgh, Pa.

Moving Baskets

(See Baskets, Moving.)

Nailless Strapping Systems

(See Box Strapping Machines.)

Overalls

(See Work Suits.)

Packing Pads

(See Pads, Furniture.)

Pads, Excelsior

American Forest Products Co., Phila-
delphia, Pa.
Atlantic Excelsior Mfg. Co., 507 W. 30th
St., New York City.
Boston Excelsior Co., 562 W. 29th St.,
New York City.
Du Pre Manufacturing Co., Atlanta, Ga.
Excelsior Wrapper Co., 224 W. Kinzie
St., Chicago, Ill.
H. W. Selle & Co., 1012 N. Halsted St.,
Chicago, Ill.

Pads, Furniture

S. Arbeit Co., 119 McKibben St., Brook-
lyn, N. Y.
Barnett Canvass Goods & Bag Co.,
Philadelphia, Pa.
Booth Felt Co., Inc., 463 Nineteenth St.,
Brooklyn, N. Y.
Wm. H. Breen, Charlestown, Mass.
Brooklyn Canvas Cover Co., 129 Grand
Ave., Brooklyn, N. Y.
A. Bruns & Sons, 50 Ralph Ave., Brook-
lyn, N. Y.
Chicago Quilt Mfg. Co., 1355 Roosevelt
Rd., Chicago, Ill.
Dafoe-Eustice Co., Detroit, Mich.
Donnelly Son & Putnam, 23 Lispenard
St., New York City.
Du Pre Mfg. Co., Atlanta, Ga.
Excelsior Wrapper Co., 224 W. Kinzie
St., Chicago, Ill.
Fulton Bag & Cotton Mills, 330 Wythe
Ave., Brooklyn, N. Y.
R. L. Laacke Co., Milwaukee, Wis.
David H. Levine Bedding Co., New
Britain, Conn.
Lyon & Healy, Wabash Ave. and Jack-
son Blvd., Chicago, Ill.
Chas. A. Maish Co., Cincinnati, O.
Milvo Awning & Tent Works, Rome,
N. Y.
Oshkosh Excelsior Co., Oshkosh, Wis.
Peerless Packing Pad Co., Jersey City,
N. J.

Perfect Packing Pad Co., 1130 Cherry
St., Chicago, Ill.
A. L. Reach Textile Co., 19 W. 18th St.,
New York City.
Richards Mfg. Co., Philadelphia, Pa.
Rochester Pad & Wrapper Co., Roches-
ter, N. Y.
H. W. Selle & Co., 1000 N. Halsted St.,
Chicago, Ill.
Sheboygan Pad Co., Sheboygan, Wis.
Star Quilt Mfg. Co., 1855 W. Roosevelt
Rd., Chicago, Ill.

Paper, Cedar, Pine and Tar

(See Insecticides.)

Piano Covers

(See Pads, Furniture.)

Piano Racks

(See Racks, Storage.)

Pine Paper

(See Insecticides.)

Polish, Furniture

A. B. Polish Co., 1515 Haddon Ave.,
Chicago, Ill.
Adams & Eltinge Co., 726 Washington
Blvd., Chicago, Ill.
American Chemical & Mining Co., At-
lanta, Ga.
American Metal Polish Co., Boston,
Mass.
Black Cat Polish Co., Buffalo, N. Y.
Bradley & Vrooman Co., 2632 So. Dear-
born St., Chicago, Ill.
Buffalo Specialty Co., Buffalo, N. Y.
Certain-teed Products Co., St. Louis,
Mo.
Channell Chemical Co., 4501 Western
Blvd., Chicago, Ill.
Cleanola Co., Pittsburgh, Pa.
Wm. Connors Paint Mfg. Co., Troy,
N. Y.
Continental Mfg. Co., Indianapolis, Ind.
Alex. C. Ferguson, Jr., Philadelphia, Pa.
Gold Medal Polish Co., Racine, Wis.
Keep Bros., Philadelphia, Pa.
Lyknu Polish Mfg. Co., Pittsburgh, Pa.
Marshall Oil Co., Marshalltown, Iowa.
Martin & Martin, 3005 Carroll Ave., Chi-
cago, Ill.
Montauk Paint Mfg. Co., Second Ave.,
and 13th St., Brooklyn, N. Y.
R. W. Morris Mfg. Co., Kansas City, Mo.
T. H. Nevins Co., Pittsburgh, Pa.
Northwestern Mfg. Co., Indianapolis,
Ind.
NoXal Polish Mfg. Co., Philadelphia,
Pa.
Nubian Paint & Varnish Co., 1856 Le-
clair Ave., Chicago, Ill.
O-Cedar Corporation, 4501 So. Western
Blvd., Chicago, Ill.
O'Kleen-O Products Co., Baltimore, Md.
Puritan Soap Co., Rochester, N. Y.
W. W. Reed Mfg. Co., 17 Caldwell St.,
Boston, Mass.
Rochester Chemical Co., Rochester,
N. Y.
Saneline Corp., Inc., 2134 No. Clark St.,
Chicago, Ill.
Sherwin-Williams Co., Cleveland, O.
L. Sonneborn Sons, 114 Fifth Ave., New
York City.
Standard Chemical Co., Houston, Tex.
Three in One Oil Co., 165 Broadway,
New York City.
E. W. Thumb Co., 872 Orleans St., Chi-
cago, Ill.
Wadsworth-Hocoland Co., 225 N. Car-
penter St., Chicago, Ill.

Portable Saws

(See Saws, Machine.)

Racks, Storage

Art Metal Construction Co., Jamestown,
N. Y.
P. A. Heller & Sons, Detroit, Mich.
Edward L. Koenig Co., 23 W. Kinzie St.,
Chicago, Ill.
A. G. Leake Erecting Co., Bridgeport,
Conn.
David Lupton's Sons Co., Philadelphia,
Pa.
Lyon Metallic Co., Aurora, Ill.
Mills Co., Cleveland, O.
New York Machinery Co., 200 Fifth
Ave., New York City.
Penn Rivet Co., Philadelphia, Pa.
Service Steel Products Co., 308 N. Dear-
born St., Chicago, Ill.

Rug Cleaners

(See Carpet Cleaning Equipment.)

Safes

American Safe Co., Anderson, Ind.
Barnes Safe & Lock Co., Pittsburgh, Pa.
Barnes Safe & Vault Co., Richmond, Va.
J. Baum Safe & Lock Co., Cincinnati, O.
Cary Safe Co., Buffalo, N. Y.
Diebold Safe & Lock Co., Canton, O.
General Fireproofing Co., Youngstown,
O.
Hall's Safe Co., Cincinnati, O.
Harrigan Safe Co., Kansas City, Mo.

Hermann Safe Co., San Francisco, Cal.
Melink Steel Safe Co., Toledo, O.
Miller Safe Co., Baltimore, Md.
Morris-Ireland Safe Co., 64 Sudbury St., Boston, Mass.
National Safe & Lock Co., 2341 E. 69th St., Cleveland, O.
Norris Safe & Lock Co., Seattle, Wash.
Reliable Safe Lock Co., Inc., Covington, Ky.
Remington & Sherman Co., 359 Broadway, New York City.
Schwab Safe Co., Lafayette, Ind.
Stiffel & Freeman Co., Philadelphia, Pa.
Syracuse Safe Co., Syracuse, N. Y.
Waltz Safe & Lock Co., San Francisco.
York Safe & Lock Co., York, Pa.

Saws, Machine

American Saw Mill Machinery Co., Hackettstown, N. J.
C. H. & E. Mfg. Co., Milwaukee, Wis.
Monarch Electric Saw Co., San Francisco, Cal.
Neal Handy Saw Co., 7208 Euclid Ave., Cleveland, O.
Oshkosh Mfg. Co., Oshkosh, Wis.
Ransome Concrete Machinery Co., Dunellen, N. J.
Taylor Iron Works & Supply Co., Macon, Ga.
J. D. Wallace & Co., 1401 W. Jackson St., Chicago, Ill.
Worth Machinery Manufacturers, Los Angeles, Cal.

Scales

American Cutlery Co., 764 Mather St., Chicago, Ill.
American Scale Co., Kansas City, Mo.
American Kron Scale Co., 430 E. 53d St., New York City.
Bennington Scale Co., Bennington, Vt.
Buffalo Scale Co., Inc., Buffalo, N. Y.
John Chatillon & Sons, 85 Cliff St., New York City.
Dayton Scale Co., Dayton, O.
Fairbanks Co., 416 Broome St., New York City.
E. & T. Fairbanks & Co., St. Johnsbury, Vt.
Fairbanks Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Gaston Scale Co., Beloit, Wis.
General Automatic Scale Co., St. Louis, Mo.
Howe Scale Co., Rutland, Vt.
International Business Machines Corp., 50 Broad St., New York City.
Knowles Scales Works, Lowell, Mass.
Merrick Scale Mfg. Co., Passaic, N. J.
National Scale Co., Chicopee Falls, Mass.
Osgood Scale Co., Binghamton, N. Y.
Pneumatic Scale Corp., Norfolk Downs, Mass.
Sawyer Specialty Scale Co., Jacksonville, Fla.
Smith Scale Co., Columbus, O.
Standard Scale & Supply Co., Pittsburgh.
Toledo Scale Co., Toledo, O.
Winslow Government Standard Scale Works, Terre Haute, Ind.

Solid Rubber Tires

(See Tires, Motor Truck.)

Sprinklers, Fire

Associated Automatic Sprinkler Co., Philadelphia, Pa.
Automatic Fire Alarm Co., 416 Broadway, New York City.
Automatic Sprinkler Co. of America, 122 William St., New York City.
California Automatic Fire Sprinkler Co., Los Angeles, Cal.
Crowder Bros., St. Louis, Mo.
M. J. Daly & Sons, Waterbury, Conn.
Esty Sprinkler Co., Laconia, N. H.
Fire Protection Co., 419 W. 18th St., Chicago, Ill.
Fire Protection Engineering Co., San Francisco, Cal.
Foamite-Childs Corp., Utica, N. Y.
Globe Automatic Sprinkler Co., Philadelphia, Pa.
Grinnell Co., Inc., Providence, R. I.

Independent Aetna Sprinkler Co., Philadelphia, Pa.
Independent Automatic Sprinkler Co., San Francisco, Cal.
International Sprinkler Co., 123 William St., New York City.
Pacific Fire Extinguisher Co., San Francisco, Cal.
Rhode Island Supply & Sprinkler Co., Providence, R. I.
Rockwood Sprinkler Co., Worcester, Mass.
John Simmons Co., 110 Centre St., New York City.
U. S. Automatic Sprinkler Co., 1392 Lexington Ave., New York City.
H. G. Vogel Co., 15 West 37th St., New York City.
Western Automatic Sprinkler Co., Los Angeles, Cal.
Wyckoff & Lloyd Co., Springfield, Mass.

Steel Clasps

(See Box Strapping Machines.)

Stencil Machines

A. J. Bradley Mfg. Co., 101 Beekman St., New York City.
Diagraph Co., St. Louis, Mo.
Ideal Stencil Machine Co., Belleville, Ill.
Marsh Shipping Service, Inc., Belleville, Ill.
James H. Matthews & Co., Pittsburgh, Pa.
United Autograph Register, 2316 W. 43d St., Chicago, Ill.

Storage Batteries

(See Batteries, Storage.)

Storage Racks

(See Racks, Storage.)

Strapping Systems

(See Box Strapping Machines.)

Tar Paper

(See Insecticides.)

Tarpaulins

American Tent & Awning Co., Minneapolis, Minn.
Anchor Supply Co., Evansville, Ind.
Joseph J. Aronoff, Trenton, N. J.
Atlanta Tent & Awning Co., Atlanta, Ga.
Baker & Lockwood Mfg. Co., Kansas City, Mo.
Bethlehem Shipbuilding Corp., Philadelphia, Pa.
Brooks Tent & Awning Co., Denver, Colo.
Buckeye Tent & Awning Mfg. Co., Columbus, O.
Carnie-Goudie Mfg. Co., Kansas City, Mo.
George B. Carpenter & Co., 440 N. Wells St., Chicago, Ill.
Dafoe Eustice Co., Detroit, Mich.
Denver Tent & Awning Co., Denver, Colo.
J. C. Goss Co., Detroit, Mich.
Hettick Mfg. Co., Toledo, O.
Wm. E. Hooper & Sons Co., Baltimore, Md.
R. A. Humphry's Sons, Philadelphia, Pa.
Wm. A. Iden Co., 564 Washington Blvd., Chicago, Ill.
Jacksonville Tent & Awning Co., Jacksonville, Fla.
Lincoln Tent & Awning Co., Lincoln, Neb.
Andrew Mills & Sons, 53 South St., New York City.
A. L. Reach Textile Co., 29 Houston St., New York City.
Arthur F. Smith Co., 139 Spring St., New York City.
Wm. W. Stanley, 50 Church St., New York City.
John Sullivan & Son, 356 Hudson St., New York City.
Textile Products Mfg. Co., St. Louis, Mo.
U. S. Tent & Awning Co., 227 N. Des-plaines St., Chicago, Ill.
Walter Upsom Co., 1294 W. Eleventh St., Cleveland, O.

Wheeling Tent & Awning Co., Wheeling, W. Va.
Williams Tent & Awning Co., Buffalo, N. Y.
Wyandotte Awning & Tent Co., Kansas City, Kan.

Time Clock Systems

(See Clocks, Time.)

Tires, Motor Truck

Aetna Tire & Rubber Co., New Brunswick, N. J.
Dunlop Tire & Rubber Co., Buffalo, N. Y.
Firestone Tire & Rubber Co., Akron, O.
Fisk Rubber Co., Chicopee Falls, Mass.
B. F. Goodrich Rubber Co., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Hood Rubber Products Co., Inc., Watertown, Mass.
Kelly-Springfield Tire Co., New York City.
Mason Tire & Rubber Co., Kent, O.
Overman Cushion Tire Co., New York City.
Republic Rubber Co., Youngstown, O.
Swinehart Tire & Rubber Co., Akron, O.
United States Tire Co., New York City.

Transmissions, Motor Truck

K. E. Ahlberg Co., Los Angeles, Cal.
American Die & Tool Co., Reading, Pa.
Bedell Engineering Co., Los Angeles, Cal.
Cotta Gear Co., Rockford, Ill.
Durstont Gear Corp., Syracuse, N. Y.
Fuller & Sons Mfg. Co., Kalamazoo, Mich.
Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass.
Rocky Mountain Steel Products, Inc., Los Angeles, Cal.
Warford Corp., 44 Whitehall St., New York City.
Warner Gear Co., Muncie, Ind.
Warren Gear Products Co., Warren, Pa.
Willis Morrow Co., Inc., Elmira, N. Y.
Woodward & Rowe, San Francisco, Cal.

Truck Casters

(See Casters, Truck.)

Truck Mileage Recorders

(See Mileage Recorders, Motor Truck.)

Truck Tires

(See Tires, Cushion Motor Truck and Tires, Motor Truck.)

Truck Transmissions

(See Transmissions, Motor Truck.)

Vacuum Cleaners

(See Carpet Cleaning Equipment.)

Vaults

(See Safes.)

Wagon Pads

(See Pads, Furniture.)

Weighing Machines

(See Scales.)

Wheels, Cushion Motor Truck

Moran Cushion Wheel Co., 818 S. May St., Chicago, Ill.
Sewell Cushion Wheel Co., Detroit, Mich.

Work Suits

Motor Suit Mfg. Co., Kansas City, Mo.
Nunnally & McCrea Co., Atlanta, Ga.
Pierson Mfg. Co., Quincy, Ill.
Rockford Overall Mfg. Co., Rockford, Ill.
Sibbett Mfg. Co., Oakland, Cal.
Stuart, Keith & Co., Baltimore, Md.
Sweet-Orr & Co., Inc., 15 Union Sq., New York City.
Textile Products Co., St. Louis, Mo.
Union Special Overall Co., Cincinnati, O.
Volunteer Mfg. Co., Nashville, Tenn.

Wood Wool Pads

(See Pads, Excelsior.)

The Chamber of Commerce Convention

at Washington, May 20-22

The Voice of American Business, as Spoken at This Annual Meeting, Will Be
Interpreted from the Viewpoint of Warehouseman and Distributor
in the July Issue of Distribution & Warehousing

TWO BITS

Vol. V. No. 12

A Bit Here, A Bit There

Gotham, June, 1925

Ye Ed.'s Golfing Situation of Interest to the Storagers' Industry

WHETHER Ye Ed. has got the goat of Bill Bostwick, the Gotham storager who is chairman of the N. F. W. A. golfing committee, or whether Bill has got Ye Ed.'s goat, is of trivial importance compared with the circumstance that nobody is donating any golfing utensils to go with the 1 mid-iron & 1 golf bag gifted us several mos. ago by Syd Green, the Petersburg, Va., storager.

In our March *Two Bits* we justly rebuked Bill for publishing on the "Burlap Bag" page of *The Furniture Warehouseman* that Ye Ed.'s N. F. W. A. tournament score at Augusta last Jan. was 180 for 18 holes, on a/c it was 172.

In a subsequent contribution to the "Burlap Bag" Bill has further tried to insult us—something that is admittedly impossible—by saying that D. & W. (standing for *Distribution & Warehousing*) evidently means Dig and Walk, which Bill says is descriptive of our golf, & he insinuates that 1 reason our golfing is rotten is because we are too cheap to acquire a golfing suit, & he says we are technical in the extreme because we took exception to his statement that our tournament score was 180 when it was only 172, & he asks furthermore:

"We would like to know why does this gentleman [*sic*, & our thanks, Bill] want more clubs—if he makes 172 strokes with one, is it not reasonable to assume that with five he would make 860 strokes?"

Ye Ed Stymied

That is going entirely too far, Bill. Our record for any 1 hole is 32 strokes, but that was before Syd Green, the Petersburg, Va., storager, donated us with the 1 mid-iron & the 1 golf bag. Since then we nearly made a hole in par but the golf bag slipped off from around our shoulder at a critical moment & landed on the ball & the mid-iron tore a hole in the bag instead of striking the ball, & the bag then landed in front of the ball & sort of had us stymied, & as we were not at that time familiar with the golfing rules, we did not remove the bag but, instead, we tried a "lift shot"—something new in golfing—& lifted the ball over the bag & over the whole darned green, otherwise we would have

made the hole in par. Since that deplorable incident we have been hiring a caddie to carry our bag & Andy Murray, *Two Bits*'s business mgr., has been O.K.-ing this expense under the head of "entertainment"—which Bill Bostwick will probably say "'Entertainment' is right!"

Meanwhile excruciating interest continues to be manifested by the storagers' industry in our golfing progress, as evidenced by 3 communications which have come to hand.

The 1st is anonymous but is on a

THAT PEA-EATING MACHINE

ON a/c this is the annual *Material Handling & Equipment* issue of *Distribution & Warehousing* we was very anxious that the pea-eating machine which Leo Roche, our cartoonist, planned to invent with Ye Ed.'s assistance, & which we have been promising to explain & illustrate on this page, should be finished in time for this mo.'s *Two Bits*, but Fate and Leo's obstructionistic tactics have combined to disappoint the storagers' industry too late.

It appears that Leo used to live in Boston. Accordingly he is more interested in producing a machine to improve bean-eating than he is in any invention designed to promote more cultured pea epicurism.

"It is going to be a bean-eating machine," said Leo, temperamentally tearing up a funny cartoon which he had hoped to sell to the *Saturday Evening Post* for \$100.

"It is going to be a pea-eating machine," said Ye Ed., smashing the back-spacer key of our Underwood typewriter in our excitement.

There the situation stands—*status quo* as we go to press. It could be *pro con exculpis* for all we care, or even *e bono pluribus*. There is only 1 editor editing *Two Bits*, and that is Ye Ed. If Leo's contraption turns out to be a bean-eating invention, he will have to exploit it elsewhere. Pea gastronomy is the only kind of gastronomy *Two Bits* is interested in at this juncture.

letterhead of Cass & Johansing, insurance brokers, & comes from Chicago, where Andy Murray has been of late, trying to drum up trade. The unidentified writer elaborates our golfing outfit a bit by sending us a tee along with the following:

"One Andy Murray, who says he is from Gotham & connected with *Two Bits*, has explained to me your futile efforts—or rather lack of appreciation by the storagers' industry of your endeavor—to collect a golfing outfit.

"Myself being of distant Scotch ancestry & not given to contributions, I can't help, but I feel somewhat moved by the pitiful presentation of your past efforts; nevertheless I wish to contribute in what you might consider a somewhat feeble way to the outfit which you have for so long been endeavoring to complete. Therefore I inclose you a tee. Should you ever require another, please say so & I will be glad to write the manufacturer to provide another.

"Though you may not realize it, this contribution is hand-carved from a solid piece of ivory mined at the famous St. Paul Ivory Quarry, & while the indirect contributor is 1 storager by name of Meisenbach of Dallas, Tex., the direct contributor is an insurer temporarily located in Chicago & far from the balmy breezes of the So. Calif. shore.

"Diffidence alone stands in the way of my identifying myself because of the priceless gift herewith inclosed. Chick Evans has for years tried to procure 1 of these tees. You have it on him that much."

Ivory's Real Use

As a matter of fact the donated tee is not from ivory mined at St. Paul at all, as Ye Ed. knows definitely that all St. Paul ivory is used exclusively for fashioning feminine skin. The tee is made of celluloid & accordingly was probably grown in a Michigan celery garden insured by Lloyds of London.

The 2nd communication is from K. K. Meisenbach, the Dallas storager who is the indirect contributor of the aforementioned tee. Meisy donates us a putter, saying "here is one your size & for the game you play," but it is only

(Concluded—why not?—on page 62)

Points to Consider When Buying Trucks

How to Use the Appended Gas and Electric Vehicle Specification Tables

By PHILIP L. SNIFFIN

ANYONE who is in a position to observe the practices of many different warehouse concerns soon learns that each has its own way of going about the purchase of new truck equipment. Some go into the subject very deeply and obtain a careful analysis from an outside advisory engineer whose judgment is imparted to all makes and whose recommendations are based on the owner's special needs. Others are not so careful. They decide they need a new truck of a certain capacity and choose that which seems to them to offer the best value for their purposes.

Truck buying nowadays is much different than it was ten, or even five, years ago. Competition has forced truck manufacturers to adopt more aggressive methods to sell their equipment. Users of trucks are buying *transportation*, not trucks. By this we mean that they are buying equipment as a service, not as a product—on a basis of what it will do for them, not what it is.

This point deserves emphasis and can be made clearer when we say that it is a common thing today for a local truck sales agency to make a complete analysis of a prospective purchaser's hauling requirements to show *why* and *how* the types and capacities of trucks which they recommend, should be used. Among the larger and best reputed manufacturers who offer this analysis service, engineers

are employed who do nothing except this. Although, of course, their purpose is to sell the equipment, the writer's experience has been that most of them study each problem fair-mindedly. The service is quite worth while and if the buyer knows enough about his own hauling conditions intelligently to agree or disagree with the report, he does well to take advantage of it.

This tendency to buy trucks on a basis of the way they fit into a business as transportation units has been responsible for the growing acceptance of the "transportation engineer" in the truck field. In many large cities today there are trained engineers whose services are available as consultants on problems of both buying and using motor trucks. These men work independently of the truck manufacturers on a fee basis. The field is a new one, yet they are, as a fraternity, working hard for the acceptance of the industry. The writer knows of many instances where the services of an outside viewpoint such as this has paid its cost many times over in actual savings of transportation costs. The transportation engineer is being consulted quite frequently now on such matters as selecting equipment, designing bodies, rearranging schedules, laying out garages and repair shops, and establishing maintenance policies.

Looking Over the Market

WHEN the warehouse owner has studied his truck buying problems to the point where he knows the type and capacity of equipment he should buy, so that it becomes a matter of choosing between makes, he will find a great source of help in the specification tables published herewith beginning on page 44. These tables show the principal features of the various makes and sizes of vehicles which are available. It does not require an engineer to understand the differences in these features.

The columns which show wheelbase, bore and stroke, N. A. C. C. rated horsepower, gear-ratio and weight of chassis are particularly important for comparative purposes.

A good way to use this table is to make up a set of cards, one for each truck in which the buyer is interested. If each of these cards has written on it the essential features of one truck taken from the specification table, the buyer can lay the cards before him and, by process of elimination, select the one which he considers to be the best pur-

Your Business and the Motor Truck

THIS article, the thirty-second of a series written by Mr. Sniffin, should be read directly in connection with the tables of motor truck specifications beginning on page 44.

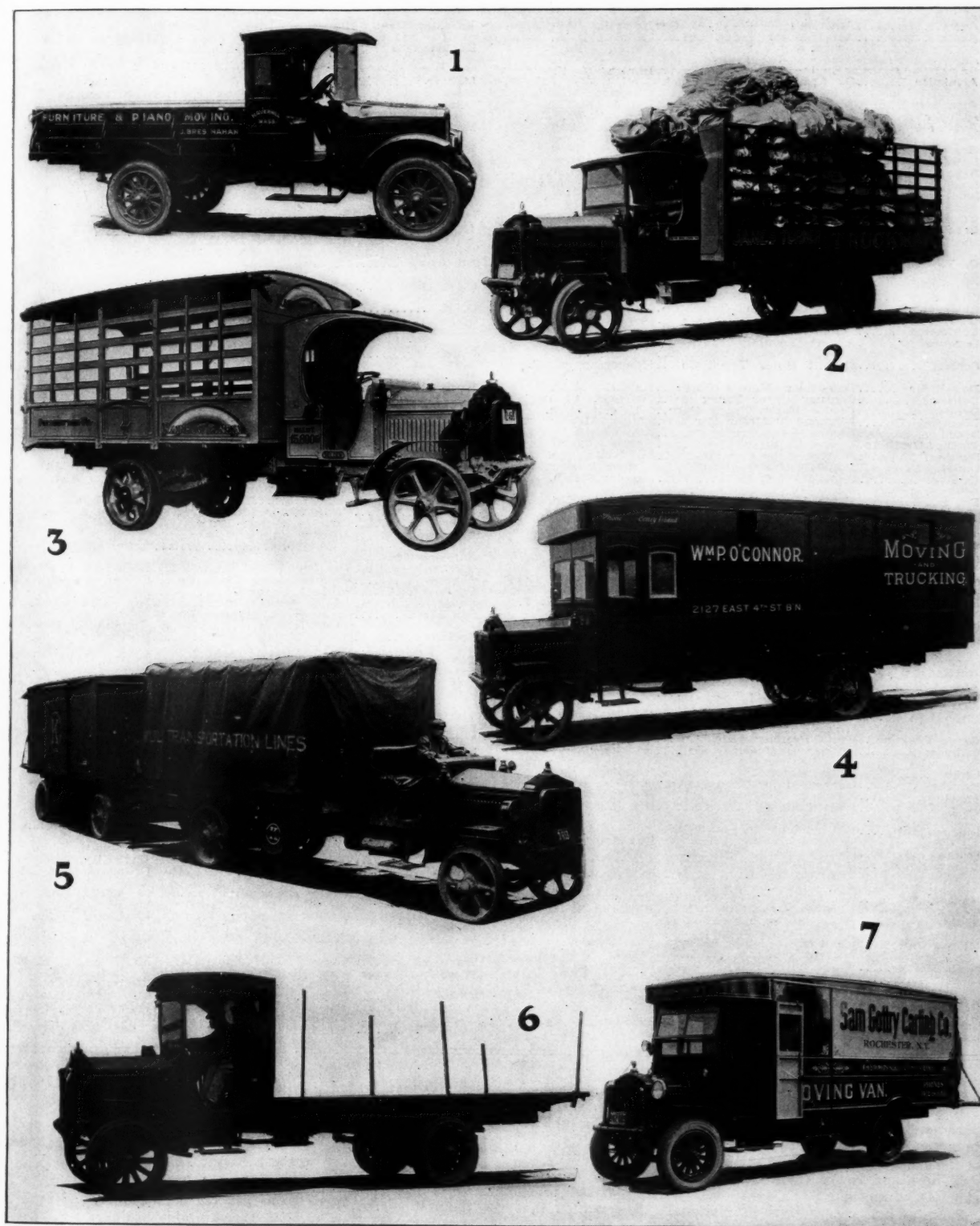
If you are in the market for a truck, buy *transportation* rather than the truck itself as a product, the author urges—and he presents some suggestions on how to use the specification tables herewith published.

Formerly with the International Motor Co., Mr. Sniffin, a motor truck advisory engineer, is a recognized authority in this field. He has been making a special study of this subject in relation to the public storage industry in order to write these articles.

chase. In this way he has the equivalent of the trucks themselves before him. It enables him to keep the advantages and disadvantages of each fresh in his mind all the time and minimizes the danger of being swayed by persuasive salesmanship.

Among the points to be considered, including those shown by the specification tables, the writer considers the following to be the most worthy of study in matching one vehicle against another. In this list suggestions are added which can be answered by the buyer's own estimate based on the general reputation of the vehicle and information from other sources.

1. Actual capacity.
2. Chassis price.
3. Estimated mileage life (based on reputation for quality).
4. Facilities offered for service by local sales agency.
5. Wheelbase (both short and long have advantages, depending on purpose. Short for easier handling. Long for better appearance and distribution of loading space).



1. Express type body. 2. Open rack body with provision for tarpaulin cover. 3. Covered rack body with side tarpaulins. Doors for loading at one side and rear. 4. Van body with doors at both sides and rear. 5. Truck and trailer. Note that trailer is designed as a freight car. 6. Platform type body. 7. Van body for rear loading

Addresses of Gas and Electric Truck Manufacturers

Trade Name	Name	Address	Trade Name	Name	Address
Ace	American Motor Truck Co.	Newark, Ohio.	Larrabee-Deyo	Larrabee-Deyo Motor Truck Co., Inc.	Binghamton, N. Y.
Acme	Acme Motor Truck Co.	Cadillac, Mich.	Luedinghaus	Luedinghaus - Espenschied Wagon Co.	St. Louis, Mo.
Acorn	Acorn Motor Truck Co.	Chicago, Ill.	Maccar	Maccar Truck Co.	Scranton, Pa.
Amer.-La France	American-La France Fire Engine Co.	Elmira, N. Y.	Mack	International Motor Co.	New York, N. Y.
Armleder	O. Armleder Motor Truck Co.	Cincinnati, Ohio.	Mason Road	Mason Motor Truck Co.	Flint, Mich.
Atterbury	Atterbury Motor Car Co.	Buffalo, N. Y.	Master	Master Motor Truck Mfg. Co.	Chicago, Ill.
Autocar	Autocar Co.	Ardmore, Pa.	Menominee	Menominee Motor Truck Co.	Clintonville, Wis.
Available	Available Truck Co.	Chicago, Ill.	Moreland	Moreland Motor Truck Co.	Burbank, Cal.
Bessemer	Bessemer Motor Truck Co.	Plainfield, N. J.	Nash	Nash Motors Co.	Kenosha, Wis.
Bethlehem	Bethlehem Motors Corp.	Allentown, Pa.	National	National Steel Car Corp., Ltd.	Hamilton, Ont., Canada
Betz	Betz Motor Truck Co.	Hammond, Ind.	Nelson-LeMoon	Nelson & Le Moon	Chicago, Ill.
Biederman	Biederman Motors Co.	Cincinnati, Ohio.	Netco	New England Truck Co.	Fitchburg, Mass.
Bridgeport	Bridgeport Motor Truck Corp.	Stratford, Conn.	Noble	Noble Motor Truck Co.	Kendallville, Ind.
Brinton	Brinton Motor Truck Co.	Philadelphia, Pa.	Northway	Northway Motors Corp.	Natick, Mass.
Brockway	Brockway Motor Truck Corp.	Cortland, N. Y.	O. B. (Elec.)	O. B. Electric Vehicles, Inc.	Long Island City, N. Y.
C. T. Elec.	Commercial Truck Co.	Philadelphia, Pa.	O. K.	Nolan Truck Co.	Okay, Okla.
Casco	Casco Motors, Inc.	Sanford, Me.	Ogden	Ogden Truck Co.	Chicago, Ill.
Chevrolet	Chevrolet Motor Co.	Detroit, Mich.	Oshkosh	Oshkosh Motor Truck Mfg. Co.	Oshkosh, Wis.
Clinton	Clinton Motors Corp.	Reading, Pa.	Overland	Willis-Overland Co.	Toledo, Ohio.
Clydesdale	Clydesdale Motor Truck Co.	Clyde, Ohio.	Patriot	Patriot Mfg. Co.	Havelock, Neb.
Columbia	Columbia Motor Truck Co.	Pontiac, Mich.	Penn	Penn Motors Corp.	Philadelphia, Pa.
Commerce	Commerce Motor Truck Co.	Ypsilanti, Mich.	Pierce-Arrow	Pierce-Arrow Motor Car Co.	Buffalo, N. Y.
Concord	Abbott-Downing Truck & Body Company	Concord, N. H.	Power	Power Truck & Tractor Co.	St. Louis, Mo.
Corbitt	Corbitt Motor Truck Co.	Henderson, N. C.	Rainier	Rainier Trucks, Inc.	Long Island City, N. Y.
Day-Elder	Day-Elder Motors Corp.	Newark, N. J.	Rehberger	Arthur Rehberger & Son, Inc.	Newark, N. J.
Defiance	Century Motor Truck Co.	Defiance, Ohio.	Reo	Reo Motor Car Co.	Lansing, Mich.
Denby	Denby Motor Truck Corp.	Detroit, Mich.	Republic	Republic Motor Truck Co., Inc.	Alma, Mich.
Diamond	Diamond T. Motor Car Co.	Chicago, Ill.	Rowe	Rowe Motor Mfg. Co.	Lancaster, Pa.
Dixon	Dixon Motor Truck Co.	Altoona, Pa.	Ruggles	Ruggles Motor Truck Co.	Saginaw, Mich.
Dodge Brothers	Dodge Brothers, Inc.	Detroit, Mich.	Rumely	Advance Rumely Thresher Co.	Laporte, Ind.
Dorris	Dorris Motor Car Co.	St. Louis, Mo.	Safeway Six	The Six Wheel Co.	Philadelphia, Pa.
Double Drive	Double Drive Truck Co.	Benton Harbor, Mich.	Sandow	Sandow Motor Truck Co.	Chicago Heights, Ill.
Duplex	Duplex Truck Co.	Lansing, Mich.	Sanford	Sanford Motor Co.	Syracuse, N. Y.
Eagle	Eagle Motor Truck Corp.	St. Louis, Mo.	Sauer	Adolph Saurer, Inc.	New York, N. Y.
F. W. D.	Four-Wheel Drive Auto Co.	Clintonville, Wis.	Schacht	G. A. Schacht Motor Truck Co.	Cincinnati, Ohio.
Fageol	Fageol Motors Co.	Oakland, Cal.	Selden	Selden Truck Corp.	Rochester, N. Y.
Federal	Federal Motor Truck Co.	Detroit, Mich.	Service	Service Motors, Inc.	Wabash, Ind.
Fisher Fast Freight	Standard Motor Truck Co.	Detroit, Mich.	Standard	Standard Motor Truck Co.	Detroit, Mich.
Ford	Ford Motor Co.	Highland Park, Mich.	Steinmetz (Elec.)	Steinmetz Electric Motor Car Corp.	Arlington, Baltimore, Md.
Front Drive	Double Drive Truck Co.	Benton Harbor, Mich.	Sterling	Sterling Motor Truck Co.	Milwaukee, Wis.
Fulton	Fulton Motors Corp.	Farmingdale, N. Y.	Stewart	Stewart Motor Corp.	Buffalo, N. Y.
G. M. C.	General Motors Truck Co.	Pontiac, Mich.	Stoughton	Stoughton Wagon Co.	Stoughton, Wis.
G. W. W.	Wilson Truck Mfg. Co.	Henderson, Iowa.	Super Truck	O'Connell Motor Truck Co.	Waukegan, Ill.
Garford	Garford Motor Truck Co.	Lima, Ohio.	Traffic	Traffic Motor Truck Corp.	St. Louis, Mo.
Gary	Gary Motor Corp.	Gary, Ind.	Transport	Transport Truck Co.	Mt. Pleasant, Mich.
Gotfredson	Gotfredson Truck Corp.	Detroit, Mich., and Walkerville, Ont.	Traylor	Traylor Eng. & Mfg. Co.	Allentown, Pa.
Graham	Graham Brothers	Detroit, Mich.	Triangle	Triangle Motor Truck Co.	St. Johns, Mich.
Gramm-Bernstein	Gramm-Bernstein Motor Truck Co., Inc.	Lima, Ohio.	Twin City	Minneapolis Steel & Machinery Co.	Minneapolis, Minn.
Grass Premier	Grass Premier Truck Co.	Sauk City, Wis.	U. S.	United States Motor Truck Co.	Cincinnati, Ohio.
Guildler	Guildler Engineering Co.	Poughkeepsie, N. Y.	Union	Union Motor Truck Co.	Bay City, Mich.
Hahn	Hahn Motor Truck Co.	Hamburg, Pa.	United	United Motor Products Co.	Grand Rapids, Mich.
Harvey	Harvey Motor Truck Co.	Harvey, Ill.	Victor	Victor Motors, Inc.	St. Louis, Mo.
Hawkeye	Hawkeye Truck Co.	Sioux City, Iowa.	Wachusett	Wachusett Motors, Inc.	Fitchburg, Mass.
Hug	Hug Company	Highland, Ill.	Walker (Elec.)	Walker Vehicle Co.	Chicago, Ill.
Independent	Independent Motor Truck Co., Inc.	Davenport, Iowa.	Walker (Elec.)	Walker Motor Truck Co.	Long Island City, N. Y.
Indiana	Indiana Truck Corp.	Marion, Ind.	Ward (Elec.)	Ward Motor Vehicle Co.	Mt. Vernon, N. Y.
International	International Harvester Co. of America	Chicago, Ill.	Ward La France	Ward La France Truck Corp.	Elmira, N. Y.
Kearns	Kearns Dughe Motors Co.	Lewistown, Pa.	White	White Co.	Cleveland, Ohio.
Kelland (Elec.)	Kelland Motor Car Co.	Newark, N. J.	Wilcox	Wilcox Trux, Inc.	Minneapolis, Minn.
Kelly-Springfield	Kelly-Springfield Motor Truck Co.	Springfield, Ohio.	Winther	Winther Motor Co.	Kenosha, Wis.
Kenworth	Kenworth Motor Truck Corp.	Seattle, Wash.	Witt Will	Witt Will Co., Inc.	Washington, D. C.
King Zeitler	King Zeitler Co.	Chicago, Ill.			
Kissel	Kissel Motor Car Co.	Hartford, Wis.			
Kleiber	Kleiber Motor Truck Co.	San Francisco, Cal.			
Krebs	Krebs Motor Truck Co.	Bellevue, Ohio.			
Lange	Lange Motor Truck Co.	Pittsburgh, Pa.			
Lansden (Elec.)	Lansden Company	Danbury, Conn.			

(Continued from page 40)

6. Manufactured or assembled? (Experienced buyers usually give preference to a truck wholly manufactured by one reliable manufacturer).

7. Bore and stroke (indicates size and capacity of motor).

8. Rated hp. (rating given by National Automobile Chamber of Commerce is fair guide to actual power of vehicle).

9. Gear ratios (car geared high, bet-

ter for speed on level highways; geared low, better for hilly country).

10. Weight of chassis.

First Points to Consider

THE important point which the writer wishes to emphasize in this article, however, is that the thought surrounding the purchase of a truck begins long before the specification tables are consulted. Too few operators consider

these very important preliminary steps:

1. Determination of Best Type of Units. The problem here is to decide which of the following types offers greatest efficiency:

- Tractor trailer.
- Tractor semi-trailer.
- Demountable bodies.
- Unit containers (or)
- Conventional truck chassis.

2. Choice of:

- a. Gasoline truck.
- b. Electric truck.

Decision on this depends on kind and length of hauls.

3. Selection of Body Design. The problem of choosing the body type is particularly important. The motor truck which will be best adapted to work in conjunction with the warehouse owner's loading conditions from the shipping platform, and which has the type of body that best meets his load requirements, will produce a cash saving well worth the time required for a careful preliminary study.

There is a body type to meet every firm's local conditions perfectly. Even under the most specialized cases there is no need for a compromise, because the ideal body may be built to order, according to specifications, at only a slight additional expense. The accompanying illustrations will offer suggestions as to the most modern types which are available, and the writer earnestly recommends a careful study of these before a selection is made.

4. Judging Capacity Required. It is a common mistake to select a vehicle of inadequate size, resulting in the very expensive practice of overloading. A small percentage of overload with a high quality vehicle is often justifiable. But too many concerns insist on learning through bitter experience that with motor trucks, as with other things, "something for nothing" is not obtainable. Investigation shows that a large percentage of high hauling costs can be traced to heavy repair bills and breakdowns, and these in turn to the practice of overloading.

As the size of the business increases and as it branches into fields which require a wide radius of deliveries, it is reasonably possible that the owner will find the use of a large-size vehicle, say the 5-ton model, most profitable. There is a tremendous economy in big hauling units, but they must be routed intelligently so that the carrying capacity will not be excessively wasted.

It is a mistake to purchase a miscellaneous assortment of different makes and models of vehicles without regard for the most desirable feature of uniformity. There are many advantages to be gained in standardizing as far as possible on one make and type of vehicle. Owners and mechanics become accustomed to the vehicles in this way and learn to discover repair requirements and adjustments in their early periods. Service and parts are more easily obtained—in fact, parts may be kept on hand for immediate use. Many concerns who have standardized their truck equipment keep complete units, such as motors and transmissions, on hand so that they may be substituted in a truck for a unit that is taken out to be repaired or overhauled.

Two Kinds of Buyers

THE warehouse owner who is about to buy truck equipment can place himself in one of two classes. The truck industry recognizes these two kinds of

buyers, and it will be noticed that it appeals to them correspondingly in its advertising and selling efforts.

The first class is the buyer who is technically inclined. He will study the specification tables thoroughly. He knows the advantages of certain units of design both as applied to the quality of the truck and its value to his business.

The second class is the buyer who does not understand the engineering features of a truck chassis. He is too much consumed with other business worries to take the time to make a study of motor mechanics.

If you are of the first class you will find the specification tables published herewith to be most valuable. You will be able to weigh advantages and disadvantages of one against another. Very likely if you are highly seasoned on the subject you will find it necessary to make some compromise in reaching a decision, but you will favor the machine in which the features that you consider most important predominate.

If you are of the second class, the best advice the writer can give is to steer clear of specifications except, perhaps, to the extent mentioned earlier in this article. Do not invite explanations from salesmen, for each will surely be able to justify in argument the advantages of his design. The result will be confusing and may lead to the least desirable choice. Rather depend on the reliability of the manufacturer, his past record and the present popularity of the vehicle.

To all truck purchasers, however, the writer feels that the following suggestions are appropriate, no matter how any one individual may look at the truck-buying problem.

1. Value your own experience and observation. If you have had good results from one make of truck, stick to it. Keep your eyes and ears open and get the sentiments of others whose experience is equally as valuable to you as yours.

2. Make sure you will get service. A truck is only as good as the repair and parts service you can get on it. Can the man who sells you the truck stand back of it? Will he be able to render service in years to come?

3. Be careful not to buy a possible "orphan." If a truck manufacturer goes out of business, the truck drops considerably in resale value. Parts and service are difficult to get. A firmly established truck manufacturer will continue to render service and supply parts when they are needed.

4. Do not be confused by high trade-in offers. Remember that various trucks have various margins allowed to dealers on which to trade. The car that has a wide margin is invariably overpriced to permit it. The dealer who "trades wild" is a poor business man and very likely will not stay in business to give you service for the life of your truck. You get "so much for so much" with trucks as with everything else.

5. Be careful about buying a truck that makes radical changes in chassis or motor every few years. Don't find your-

self later with an obsolete model on your hands.

6. Think of resale value. Certain trucks command a higher second-hand value than others. You know which they are. Favor the truck on which you will suffer the least depreciation if you should be compelled to sell it in a month, a year, or even five years from now. Ask yourself, "Who would want my truck if I should ever want to sell it."

And in conclusion, let us say again and again that with the use of motor trucks the proper or improper selection of the vehicles will positively make or break success from the start. Every item of operating cost and every factor involved in rendering dependable service is determined by the manner in which the trucks are suited to the work they must do.

(Turn to page 44 for gas and electric truck specifications.)

Schaefer to Build

William H. Schaefer, formerly executive secretary of the National Furniture Warehousemen's Association and now head of the household goods warehousing and rug-cleaning firm of William H. Schaefer & Son, Stamford, Conn., has awarded to Moores & Dunford, Inc., a contract for the construction of a \$125,000 furniture storage warehouse five stories high with mezzanine floor and basement. It will contain rug display rooms, trunk, silver and rug vaults, piano rooms, cold storage equipment and a separate rug-cleaning department. It is expected that the building will be completed in the fall.

New Washington Warehouse

The Federal Storage & Freight Service, Inc., Washington, D. C., expects to complete in September a \$250,000 household goods warehouse containing rug and fur vaults under cold storage, vaults for silver, trunks and valuable paintings, piano and musical instrument rooms, private rooms for storage, and a modern rug-cleaning establishment. The exterior design will be treated with imported Travertine stone and typical Italian style of architecture. The offices, treated in Italian renaissance, will be different, it is announced, than those of any warehouse in the country. Moores & Dunford, Inc., are the architects.

Hess Buys Blakeslee Co.

Frank E. Hess, president of the Ralph N. Blakeslee Co., in the household goods and merchandise storage business at Waterbury, Conn., has purchased the company and property from Mrs. Jesse M. Blakeslee, widow of the man who was the owner. The Blakeslee firm is a member of the National Furniture Warehousemen's and Connecticut Warehousemen's Associations.

Commercial Car Specifications

The Specifications, Chassis Prices, Etc., Are Corrected From Data Supplied Direct by the Makers.
Gasoline Tractor-Trucks Will Be Found at the End of Gasoline Commercial Cars

(Where prices are not given it is because we have been unable to get them from authoritative sources)

ENGINE				REAR AXLE			ENGINE				REAR AXLE				
TRADE NAME AND MODEL	Chassis Price	Make and Model	Bore and Stroke (In.)	Clutch Make	Gearset Make and Model	Make and Model	Final Drive	TRADE NAME AND MODEL	Chassis Price	Make and Model	Bore and Stroke (In.)	Clutch Make	Gearset, Make and Model	Make and Model	Final Drive
1000 Pounds															
Chevrolet. Sup. Com. Ch.	\$425	Own.....	3 1/4 x 4	Own.....	Own Sup.....	Own Sup.....	S	Autocar.....	F	Own 2.....	4 3/4 x 4 1/2	Own.....	Own F.....	Own F.....	R
Overland..... 91	395	Own 91.....	3 1/2 x 4	B&B.....	Own 91.....	Own 91.....	B	Autocar.....	G	Own 2.....	4 3/4 x 4 1/2	Own.....	Own F.....	Own F.....	R
1500 Pounds															
Dodge Brothers.....	705	Own.....	3 7/8 x 4 1/2	Own.....	Own.....	Own.....	S	Biederman.....	E	Con 6M.....	3 3/4 x 4 1/2	B-L.....	B-L 31.....	Tim.....	W
Rainier..... R-31	1970	Con N.....	3 3/4 x 5	B-L.....	B-L 30.....	Tim 6258.....	W	Brockway.....	E	Wis SU.....	4 x 5	B-L.....	B-L 30.....	Col 52024.....	B
White..... 15	2150	Own GK.....	3 3/4 x 5 1/2	Own.....	Own 15.....	Own 15.....	B	Clinton.....	20	Bud WTU.....	3 3/4 x 5	B-L.....	B-L 30.....	Col 53000.....	W
Yellow Cab..... Mod T3	1295	Con V-7.....	3 3/4 x 5	B-L.....	B-L 30Y.....	Tim 5330.....	B	Clydesdale.....	10A	Con J-4.....	3 3/4 x 5	B-L.....	B-L 31.....	Tim 6258.....	W
1 TON															
Acme..... Flyer		Con S4.....	4 1/4 x 4 1/2	B-L.....	B-L 31.....	Col 52000.....	S	Corbitt.....	25	Con S4.....	4 1/4 x 4 1/2	B-L.....	B-L 31.....	She W-1501.....	W
Autocar..... F		Own 2.....	4 3/4 x 4 1/2	Own.....	Own F.....	Own F.....	R	Diamond.....	T 04	Hin HAA 700.....	3 3/4 x 5 1/2	Cov.....	Cov JUC.....	Tim 6258.....	W
Autocar..... G		Own 2.....	4 3/4 x 4 1/2	Own.....	Own F.....	Own F.....	R	Eagle.....	101	Bud WTU.....	3 3/4 x 5 1/2	Cov.....	Cov C.....	Tor 1000.....	I
Bessemer..... G		Con N.....	3 3/4 x 5	Ful.....	Ful TU 3/4.....	Tor Bevel.....	B	Federal.....	R-3	Con J-4.....	3 3/4 x 5	B&B.....	Det.....	Tim 6250.....	W
Bethlehem..... KN	1595	Own KN.....	3 1/2 x 5	B&B.....	Ful SU.....	Eat 1000.....	W	Gramm-Bernstein.....	10	Lye CT.....	3 3/4 x 5	Mun.....	Sal 1483.....	Sal 1483.....	B
Betz..... J-3	1850	Own J-3.....	3 3/4 x 5 1/2	B-L.....	B-L 30.....	Tim 6352.....	W	Guider.....	B	Bud WTU.....	3 3/4 x 5 1/2	B-L.....	B-L 31.....	Clas 307.....	W
Biederman.....		Con 8R.....	3 3/4 x 5 1/2	B-L.....	B-L 31.....	Clas.....	S	Guider.....	B-6	Con 8R.....	3 3/4 x 4 1/2	B-L.....	B-L 31.....	Clas 307.....	W
Casco..... A	1700	Bud WTU.....	3 3/4 x 5 1/2	Ful.....	Ful SU L.....	Col 52000.....	S	Hahn.....	B2	Her O.....	4 x 5	B-L.....	B-L 31.....	Clas.....	B
Chevrolet..... Sup	550	Own Sup.....	3 3/4 x 5 1/2	Own.....	Own Sup.....	Own Sup.....	S	Larrabee-Deyo.....	X-2	Con 8R-6.....	3 3/4 x 4 1/2	B-L.....	B-L 31.....	Sal 1480E.....	B
Commerce..... 11		Con N.....	3 3/4 x 5	Own.....	Own SU2.....	Sal 1481.....	B	Maccac.....	EX	Wis SU.....	4 x 5	B-L.....	B-L 31.....	Sal 1526E.....	B
Concord..... E	2500	Bud GBU.....	4 x 5 1/2	B-L.....	B-L 30.....	Tim 6352.....	W	Master.....	11	Bud WTU.....	3 3/4 x 5 1/2	Ful.....	Ful LTU 8.....	Tim 5511.....	W
Corbitt..... E		Con N.....	3 3/4 x 5	B-L.....	B-L 31.....	She W1501.....	W	Menominee.....	HT	Wis SU.....	4 x 5	Det.....	Cot AAU.....	Wis.....	W
Diamond..... T75	2490	Her OX.....	4 x 5	Cov.....	Cov JUC.....	Tim 5512.....	B	Northway.....	Rocket	Own R.....	3 3/4 x 5				
Dorris..... K-2		Own.....	4 x 5 1/2	Own.....	W G.....	Tim 5512.....	B	Patriot.....	17R	Bud WTU.....	3 3/4 x 5 1/2	B&B.....	Cov MA.....	Tim 6258.....	W
Duplex..... G		Bud WTU.....	3 3/4 x 5 1/2	B-L.....	B-L.....	Tim.....	B	Reo.....	F	Own F.....	4 1/4 x 4 1/2	Own.....	Own.....	Own.....	S
Federal..... Knight	1095	Kni.....	3 3/4 x 5 1/2	B&B.....	Own TT.....	Tim 5310.....	W	Republic.....	75	Lye CT.....	3 3/4 x 5	Ful.....	Ful.....	Eat.....	I
Ford..... T	365	Own TT.....	3 3/4 x 4	Own.....	Own TT.....	Own TT.....	W	Ruggles.....	20R	Her O.....	4 x 5	B-L.....	B-L 31.....	Col 53000.....	B
Fulton..... A	1495	Bud WTU.....	3 3/4 x 5 1/2	Cov.....	Cov JUC.....	She W 1002.....	W	Selden.....	Pacemaker 24	Her O.....	4 x 5	B-L.....	B-L 31.....	Clas.....	B
Garford..... 15		Bud WTU.....	3 3/4 x 5 1/2	Own 15.....	Own 15.....	Tim 5511.....	W	Selden.....	Pacemaker 26	Con 8R-6.....	3 3/4 x 4 1/2	B-L.....	B-L 31.....	Tim 6250.....	W
Gary..... WLD	1590	Bud WTU.....	3 3/4 x 5 1/2	Ful.....	Ful TU 3/4.....	Tim 5511.....	B	Standard.....	75	Con J 4.....	3 3/4 x 5	B-L.....	B-L 31.....	Tim 6250.....	S
GMC..... K-16		Own K-16.....	3 1/2 x 5 1/2	Own.....	Own K16.....	Own K 16.....	B	Stoughton.....	C	Own.....	3 3/4 x 5	Det.....	Own.....	Col 53000.....	B
Gottfredson..... 20 B		Bud WTU.....	3 3/4 x 5 1/2	B&B.....	B-L 20.....	Clas B307.....	S	U. S. S.....	U	Bud WTU.....	3 3/4 x 5 1/2	Ful.....	Ful SU L.....	Clas B.....	S
Graham..... BB	1175	Dod.....	3 3/4 x 4 1/2	Dod.....	Dod.....	Own.....	S	United.....	25	Her OX.....	4 x 5	B-L.....	B-L 31.....	Col 53000.....	B
Gramm-Bern..... 10-5p		Lye CT.....	3 3/4 x 5	Mun.....	Mun T231B.....	Sal 1483.....	S	Victor.....	25	Her O.....	4 x 5	Ful.....	Ful LTU 5.....	Col 5200.....	S
Grass Premier..... 40	1350	Lye CT.....	3 3/4 x 5	B-L.....	B-L.....	Clas B366.....	B	1 1/2 TON							
Independent (Iowa).....		Bud WTU.....	3 3/4 x 5 1/2	Ful.....	Ful.....	Sal.....	S	Acme.....	20L	Con 8R.....	3 3/4 x 4 1/2	B-L.....	B-L.....	Tim 6258.....	W
Indians..... 11		Her OX.....	4 x 5	B&B.....	B-L 31.....	Clas 307.....	S	Armlender.....	30	Her OX.....	4 x 5	B-L.....	B-L.....	Tim.....	W
International..... "S"		Lye-Spec.....	3 1/2 x 5	Mun.....	Mun.....	Eat.....	I	Atterbury.....	24R	Vut KTU.....	4 x 5 1/4	B-L.....	B-L 31.....	Tim 6462.....	W
Kenworth..... OS	2150	Bud WTU.....	3 3/4 x 5 1/2	B-L.....	B-L 31.....	She W 1002.....	W	Autocar.....	F	Own 2.....	4 3/4 x 4 1/2	Own.....	Own F.....	Own F.....	R
King Zeidler.....	2050	Con J4.....	3 3/4 x 5	B-L.....	B-L 31.....	Tim 6258.....	W	Autocar.....	G	Own 2.....	4 3/4 x 4 1/2	Own.....	Own F.....	Own F.....	R
Kissel.....	1585	Wau X.....	3 3/4 x 4 1/2	B&B.....	D-G D-Y.....	Wis 800G.....	S	Available.....	JH	Her O.....	4 x 5	B-L.....	B-L 30.....	Tim 6460.....	W
Luedinghaus.....		Her OBX.....	4 x 5	B-L.....	B-L 31.....	Tim 5518.....	B	Bessemer.....	H2	Con J4.....	3 3/4 x 5	B&B.....	B-L 35.....	Wis.....	R
Menominee..... R-R	1875	Con S4.....	4 1/4 x 4 1/2	B-L.....	B-L 30.....	Clas B307.....	B	Biederman.....	A	Con 6M.....	3 3/4 x 4 1/2	B-L.....	B-L 31.....	Tim.....	W
Moreland..... R-R	2280	Bud WTU.....	3 3/4 x 5 1/2	Ful.....	Ful LTU 4.....	Clas B-360.....	B	Biederman.....	A	Bud WTU.....	3 3/4 x 5 1/2	B-L.....	B-L 30.....	Tim 6460.....	W
Moreland..... R-R	2280	Her OBX.....	4 x 5	B-L.....	B-L 30.....	Tim 6250.....	W	Brinton.....	C	Con N.....	3 3/4 x 5	B-L.....	B-L.....	Tim 6590.....	W
Nash..... 2018	1595	Ow 4.....	3 3/4 x 5 1/2	B-L.....	D-G C.....	Clas 1-D.....	I	Clydesdale.....	12	Con 8R.....	3 3/4 x 4 1/2	B-L.....	B-L 31.....	Tim 6258.....	W
Nelson LeMoon..... GP-1	1875	Con S4.....	4 1/4 x 4 1/2	B-L.....	B-L 30.....	Clas B307.....	B	Clydesdale.....	14	Con 8R.....	3 3/4 x 4 1/2	B-L.....	B-L 31.....	Tim 6258.....	W
Noble..... A-76	1875	Bud WTU.....	3 3/4 x 5 1/2	Ful.....	Ful LTU 4.....	Clas B-360.....	B	Columbia.....	H	Hin 300.....	3 3/4 x 5 1/2	Det.....	D-G.....	Vul.....	W
O. K. O..... O	1575	Bud WTU.....	3 3/4 x 5 1/2	Ful.....	Ful LTU.....	Tim 6250.....	W	Commerce.....	Super-11	Con S4.....	4 1/4 x 4 1/2	Ful.....	Ful SU 12.....	Sal 1481.....	B
Ogden..... A2	750	Con N.....	3 3/4 x 5	B-L.....	B-L 30.....	Tim 6258.....	W	Concord.....	EO	Bud GBU.....	4 x 5 1/2	B-L.....	B-L.....	Tim 6352.....	W
Penn..... R-29	2150	Her OBX.....	4 x 5	B-L.....	B-L 31.....	Tim 5518.....	B	Corbitt.....	D-22	Con J-4.....	3 3/4 x 5	B-L.....	B-L 31.....	She W-103.....	W
Rainier.....		Con 8-R-6.....	3 3/4 x 4 1/2	Ful.....	Ful TU 3/4.....	Tim 1501W.....	W	Day Elder.....	G	Bud WTU.....	3 3/4 x 5 1/2	B-L.....	B-L 20B.....	Tim 6258.....	W
Sandow..... G		Wis SU.....	4 x 5	Ful.....	Ful GU 7.....	Tim 6258.....	W	Day Elder.....	GST	Wis CAU.....	3 3/4 x 5	Ful.....	Ful LT.....	Own.....	W
Sandow..... G		Bud WTU.....	3 3/4 x 5 1/2	Ful.....	Ful TU 3/4.....	Tim 1501W.....	W	Defiance.....	1095	Con J4.....	3 3/4 x 5	Ful.....	Ful.....	Col.....	S
Sanford..... W-612		Her OX.....	4 x 5	Ful.....	Ful TU 3/4.....	Own.....	S	Denby.....	41	Her O.....	4 x 5	Ful.....	Ful.....	Col.....	S
Schacht.....		Con 8-R-6.....	3 3/4 x 4 1/2	Ful.....	Ful.....	Sal E.....	B	Diamond.....	T-T-2	Hin HAA 700.....	3 3/4 x 5 1/2	Cov.....	Cov JUC.....	Tim 6462.....	W
Service..... 25F		Wis SU.....	4 x 5	Ful.....	Ful GU 7.....	Tim 6258.....	W	Diehl.....	B	HS 7000.....	3 1/2 x 5	M-E.....	Dur 02500B.....	Tor S327.....	I
Sterling..... DW-8		Bud WTU.....	3 3/4 x 5 1/2	B&B.....	B-L 30.....	Eat 1500.....	W	Dixon.....	D	Con J-4.....	3 3/4 x 5	Ful.....	Ful GU-8.....	Tim 6460.....	W
Stewart..... 116	1195	Con V.....	4 x 5	B-L.....	B-L 31.....	Tim 6258.....	B	Duplex.....	GH	Bud WTU.....	3 3/4 x 5 1/2	Cov.....	Cov.....	She.....	W
Transport..... 15		Con N.....	3 3/4 x 5	Ful.....	Ful SU-1.....	Clas A W.....	B	Federal.....	S-23	Con J-4.....	3 3/4 x 5	B&B.....	Ow N 23.....	Tim 6460.....	W
Triangle..... AA	1285	H-S 2700.....	3 3/4 x 5	Ful.....	Ful LTU 4.....	Clas B-306.....	B	Fast Freight.....	1295	Bud WTU.....	3 3/4 x 5 1/2	B-L.....	B-L 20B.....	Tim 6258.....	W
Wachusett.....		Con SR.....	3 3/4 x 4 1/2	B-L.....	B-L 30.....	Tim 5511.....	W	Front Drive.....	FT	Bud CTU.....	3 3/4 x 5 1/2	B&B.....	Ow N FP.....	Own D-2.....	W
Wilcox..... AA	1900	Bud WTU.....	3 3/4 x 5 1/2	B-L.....	B-L 30.....	Tim 3600-B.....	W	Garford.....	30	Own.....	4 x 5 1/4	Ful.....	Ful TU 3.....	Tim 6462.....	W
Yellow Cab..... T1	1450	Con V4.....	3 3/4 x 5	B-L.....	B-L 35.....	Tim 5516.....	R	Gary.....	G15	Rud KRIT.....	4 x 5 1/4	Ful.....	Ful LT-3.....	Tim 6462.....	W
Yellow Cab..... T-1	1550	Con V4.....	3 3/4 x 5	B-L.....	B-L 35.....	Tim 5516.....	B	Gottfredson.....	30	Rud WTU.....	3 3/4 x 5 1/2	B&B.....	B-L 31.....	Tim 6258.....	W

KEY OF ABBREVIATIONS TO COMMERCIAL CAR SPECIFICATIONS

TIRES:

§§—Unless marked otherwise all tires are solids.
*—Pneumatics standard equipment.
†—Pneumatics at Extra Cost.
‡—Dual on Rear.

ENGINE:

Bud—Buda Co., Harvey, Ill.
Con—Continental M. Corp., Detroit, Mich.
D—Head and Side.
GBS—Golden, Belknap & Swartz Co., Detroit, Mich.
H—Overhead.
Hus—Hall-Scott Motor Car Co., Berkeley, Cal.
Her—Heresies M. Mfg. Co., Canton, Ohio.
Hin—Pinkley Motors, Inc., Detroit, Mich.
H-S—Herschell-Spillman Motor Co., North Tonawanda, N. Y.
H-C—Hall-Scott Motor Co., Berkeley, Cal.
Kni—Yellow Sleeve Valve Eng. Works, East Moline, Ill.
L—L-Head.
Lye—Lycoming M. Corp., Williamsport, Pa.

Mid—Midwest Eng. Co., Indianapolis, Ind.

FP—Full Pressure to all bearings including wrist pins.

PC—Pressure to all crankshaft and connecting rod bearings.

PS—Pressure with splash.

SP—Circulating splash.

T—T-Head.

Wau—Waukesha M. Co., Waukesha, Wis.

Wis—Wisconsin M. Mfg. Co., Milwaukee, Wis.

Yell—Yellow Sleeve Valve Eng. Works, East Moline, Ill.

X—Sleeve.

REAR AXLES:

1/2—Semi-Floating.

3/4—Three-Quarter Floating.

Atl—Atlas Axle Co., Wilmington, Del.

Clas—Clark Equip. Co., Buchanan, Mich.

Col—Columbia Axle Co., Cleveland, O.

Con—Continental Axle Co., Edgerton, Wis.

C—Chain.

B—Straight Bevel.

D—Dead.

Eat—Eaton Axle Co., Cleveland, Ohio.

Flit—Flint Motor Axle Co., Flint, Mich.

F—Floating.

Huc—Sheldon Axle & Spring Co., Wilkes-Barre, Pa.

I—Internal Gear.

L-M—L. M. Axle Co., Cleveland, Ohio.

SP—Spur Gear.

R—Double Reduction.

Rus—Russell Motor Axle Co., Detroit, Mich.

S—Spiral Bevel.</

Commercial Car Specifications—Continued

ENGINE										REAR AXLE										
TRADE NAME AND MODEL										TRADE NAME AND MODEL										
Chassis Price	Make and Model	Bore and Stroke (Ins.)	Clutch Make	Gearset, Make and Model	Make and Model	Final Drive				Chassis Price	Make and Model	Bore and Stroke (Ins.)	Clutch Make	Gearset, Make and Model	Make and Model	Final Drive				
Graham Bros.	MB 1440	Dod.	3 7/8 x 4 1/2	Dod.	Dod.	Own	W			Grass Premier	70	2650	Wau Y.	4 x 5 1/4	B-L	B-L 35.	Tim 6462	W		
Graham Bros.	LB 1490	Dod.	3 7/8 x 4 1/2	Dod.	Dod.	Own	W			Guider	E 2975	Bud GTU.	4 x 5 1/4	B-L	B-L 51.	Wis DD.	W			
Gramm-Bernstein	115	Lye.	4 x 5	Ful.	Own 602-S.	Own 602-S.	W			G. W. W.	2250	Wis SU.	4 x 5	Ful.	Ful GU 5.	Clia 2D.	W			
Gramm-Bernstein	65 2550	Con J-4.	3 3/4 x 5	Ful.	Own.	Own 602-S.	W			Hahn	K 2850	Con K4.	4 1/2 x 5 1/2	B-L	B-L 35.	Tim 6462	W			
Grass Premier	45 1550	Lye C.	4 x 5	B-L	B-L 30.	Clia B-451.	W			Hug	HA 1750	Bud WTU.	3 3/4 x 5 1/2	Ful.	Own.	Own 43.	W			
Grass Premier	60 2650	Wau Y.	4 x 5 1/4	B-L	B-L 35.	Tim 6462.	W			Indiana	20	Own 38.	4 1/2 x 5 1/2	B&B.	B-L 35.	She W-103.	W			
Guider	D 2250	Bud KTU.	3 3/4 x 5 1/2	B-L	B-L 31.	Clia 500.	W			International	43	Own 43.	3 3/4 x 5	Own.	Own 43.	Own 43.	W			
Guider	D-6 2250	Con SR.	3 3/4 x 5 1/2	B-L	B-L 31.	Clia 500.	B			Kearns	N1	Her O.	4 x 5	Ful.	B-L.	She	W			
G. W. W.	Super 1650	Wis SU.	4 x 5	Ful.	Ful.	Clia 1D.	R			Kenworth	M 3100	Bud KBU.	4 x 5 1/4	Ful.	B-L 35.	She W-103.	W			
Hahn	O 2400	Her OX.	4 x 5	B-L	B-L 31.	Wis 40A.	W			Krebs	44	Con S4.	4 1/2 x 4 1/2	B-L	B-L 35.	Tim 6162	W			
Hawkeye	K 1900	Bud WTU.	3 3/4 x 5 1/2	Ful.	Ful GU 10.	Clia 1D.	S			Krebs	46	Con SR.	3 3/4 x 5 1/2	B-L	B-L 31.	Tim 6462	W			
Hug	TA 1350	Wau.	3 3/4 x 5 1/2	Ful.	Ful.	Clia.	R			Luedinghaus	46	Wau RU4R.	4 1/2 x 5 1/2	B&B.	D-G	Tim 6462	W			
Independent	GW 2150	Con J-4.	3 3/4 x 5	Ful.	Ful GU.	She W103.	W			Maccar	V1	Wis TAU.	4 x 6	B-L	B-L 35.	Tim 6566	W			
Indiana	11A	Her OX.	4 x 5	B&B.	B-L 31.	She W-1501.	W			Maccar	V3	Wis UAU.	4 1/2 x 6	B-L	B-L 35.	Tim 6566	W			
Indiana	15	Her OX.	4 x 5	B&B.	B-L 35.	She W-1501.	W			Mack	AB 3300	Own AB.	4 1/2 x 5	Own.	Own AB.	Own AB.	W			
International	33	Own 33.	3 3/4 x 5	Own.	Own 33.	Own 33.	I			Mack	AB 3750	Own AB.	4 1/2 x 5	Own.	Own AB.	Own AB.	W			
Kearns	O	Her OX.	4 x 5	Ful.	Ful.	She.	W			Moreland	EC 3780	Con K-4.	4 1/2 x 5 1/2	B-L	B-L 51.	Tim 6414	W			
Kelly-Springfield	K70	2900	Con K-4.	4 1/2 x 5 1/2	B&B.	B-L 51.	Own.	W		Nash	3018	2150	Wn 4.	3 3/4 x 5 1/2	B&B.	D-G C.	Clia 2D.	W		
Kenworth	OL 2250	Bud WTU.	3 3/4 x 5 1/2	B-L	B-L 31.	She W1501.	W			Nash	4017	2750	Bud HU.	4 1/2 x 5 1/2	B&B.	Own 4017.	Own 4017.	W		
King Zeiler	2375	Con J-4.	3 3/4 x 5	B-L	B-L 31.	Tim 6462.	W			National	M	Wau Y.	4 x 5 1/4	B-L	B-L 30.	Tim 6460	W			
Kissel	1975	Own 4000.	3 3/4 x 5 1/2	W-G.	W-G T-38L.	Tim 6462.	W			Nel'n & LeMoon	GP2	Con S4.	4 1/2 x 4 1/2	B-L	B-L 30.	Tim 6460	W			
Kleiber	2600	Con K4.	4 1/2 x 5 1/2	B-L	B-L 50.	Tim 6460.	W			Noble	B31	2900	Bud GTU.	4 x 5 1/4	Ful.	Ful GU 7.	She 103.	W		
Krebs	34	Con S4.	4 1/2 x 4 1/2	B-L	B-L 31.	Tim 6258.	W			O. K.	K 2250	Bud ITU.	4 x 5 1/2	Ful.	Ful ITU 3.	Wis 800H.	W			
Krebs	36	Con SR.	3 3/4 x 5	B-L	B-L 31.	Tim 6258.	W			Oshkosh	AW 3080	Wis SU.	4 x 5	B-L	B-L 35.	Own A.	W			
Lange	1	2950	Con J4.	3 3/4 x 5	B-L	B-L 35.	Tim 6462A.	W		Oshkosh	AAW 3180	Wis SU.	4 x 5	B-L	B-L 35.	Own A.	W			
Larabee	XH 2300	Con 6B-6.	3 3/4 x 5	B-L	B-L 31.	She W-1501.	W			Patriot	X9L	Hin 400.	4 x 5 1/4	Cov.	Ful GU 7.	She W-103.	W			
Larabee	XJ 2350	Con SR-6.	3 3/4 x 5 1/2	B-L	B-L 31.	She W-1501.	W			Penn	2300	Bud WTU.	3 3/4 x 5 1/2	Ful.	Ful TU 3.	She W1501.	W			
Larabee	XJ 2350	Wau Y.	4 x 5 1/4	B&B.	Det.	Wis 800H.	W			Pennford	775	Ford.	3 3/4 x 4	Ford.	Own 4017.	Own 4017.	W			
Luedinghaus	AB 3000	Own AB.	4 x 5	Own.	Own AB.	Own AB.	C			Pierce Arrow	XA 3300	Own XA.	4 x 5 1/2	Own.	Own XA.	Own XA.	W			
Mack	AB 3450	Own AB.	4 x 5	Own.	Own AB.	Own AB.	C			Rainier	R28	3090	Con K4.	4 1/2 x 5 1/2	B-L	B-L 35.	She W-103.	W		
Mason	Road King	Her O.	4 x 5	B&B.	W-G Spec.	Fil Spec.	B			Rainier	R28	3190	Con K4.	4 1/2 x 5 1/2	B-L	B-L 35.	She W-103.	W		
Master	21	2290	Bud KBU.	4 x 5 1/2	Ful.	Ful SW-12.	Tim 1646B.	W		Republic	11X	Con J4.	3 3/4 x 5	Ful.	Ful.	Eat.	W			
Memominee	H 2275	Wis SU.	4 x 5	Det.	Co' AAU.	Wis 800H.	W			Rugles	41	Her O.	4 x 5	B-L	B-L 31.	She W-103.	W			
Moreland	BX 2275	Her OBX.	4 x 5 1/2	B-L	B-L 31.	Tim 6462.	W			Sandow	JS	Her O.	4 x 5	B-L	B-L 35.	Tim 6462	W			
Nel'n & LeM'n	GP1-1 1/2	Con S-4.	4 1/2 x 5 1/2	B-L	B-L 30.	Tim 6258.	W			Schacht	G 3200	Wis UAU.	4 1/2 x 6	B&B.	Own G.	Own G.	W			
O. K.	A 21	2200	Bud WTU.	3 3/4 x 5 1/2	Ful.	Ful LTU 5.	She 1501.	W		Schacht	J 2600	Wis SU.	4 x 5	Ful.	Ful GU 7.	Wis 6010.	W			
Ogden	D2	Con J-4.	3 3/4 x 5	B-L	B-L 31.	Tim 6462.	W			Selden	33	Con K4.	4 1/2 x 5 1/2	B-L	B-L 35.	Tim 6410.	W			
Power	Hin.	10F	Con J4.	3 3/4 x 5	B-L	B-L 31.	Tim 6460.	W		Sterling	DWJ-12	3065	Own FU.	4 x 5 1/2	B-L	B-L 35.	Tim 6462.	W		
Rainier	R36	2590	Con J-4.	3 3/4 x 5	B-L	B-L 30.	Tim 6462.	W		Stewart	18	1890	Lye C.	4 x 5	Ful.	Ful LTU 4.	Clia 1-D.	W		
Republic	10F	Lye T.	4 x 5	Ful.	Ful.	Tim 6462.	W			Stoughton	D	Own.	3 3/4 x 5	B-L	B-L 35.	She W103.	W			
Rugles	21	21	Wis SU.	4 x 5 1/2	B-L	B-L 31.	Col 53000.	I		Traffic	4000	1665	Con N-4.	3 3/4 x 5 1/2	Cov.	Cov MUNC.	Rus 34-1.	W		
Rumely	A 2150	Bud CTU.	3 3/4 x 5 1/2	Ful.	Ful LTU 5.	She 1501W.	W			Triangle	C 2285	Wau BUX.	3 3/4 x 5 1/2	Ful.	Ful LTU 5.	Clia 1-D.	W			
Sandow	W-615	2150	Con SR-6.	3 3/4 x 5 1/2	Ful.	Ful.	She 1501W.	W		United	32	Her OX.	4 x 5	B-L	B-L 31.	Wis 40.	W			
Sanford	W-615	2150	Con SR-6.	3 3/4 x 5 1/2	Ful.	Ful.	She 1501.	W		United	35	Her OX.	4 x 5	B-L	B-L 31.	Wis 51.	W			
Schacht	H 2500	Wis SU.	4 x 5 1/2	Ful.	Ful GU 7.	Wis 60D.	R			U. S.	NW24	Bud WTU.	3 3/4 x 5 1/2	Ful.	Ful LTU 5.	She W-103.	W			
Selden	30	Con J-4.	3 3/4 x 5 1/2	B-L	B-L 30.	Tim 6460.	W			Victor	50	2100	Her O.	4 x 5	Ful.	Ful GU 10.	Wis 65.	W		
Service	25C	Bud WTU.	3 3/4 x 5 1/2	B&B.	B-L 30.	Eat 1500.	B			Wachusett	K 3200	Con K4.	4 1/2 x 5 1/2	B-L	B-L 35.	Tim 6460.	W			
Service	34	Bud KBU.	4 x 5 1/2	B&B.	B-L 35.	Tim 6462.	W			White	20	2950	Own GK.	3 3/4 x 5 1/2	Own.	Own 20.	Own 20.	W		
Standard	12K	Con J-4.	3 3/4 x 5	B-L	B-L 31.	Tim 6352.	W			Witt Will.	P 2650	Con C-4.	4 1/2 x 5 1/2	B-L	B-L 35.	Tim 6460.	W			
Sterling	DW-10	Own FU.	4 x 5 1/2	B-L	B-L 35.	Tim 6462.	W													
Stewart	17 1595	Lye C.	4 x 5 1/2	Ful.	Ful LTU 4.	Clia 1-D.	B													
Stoughton	B	Wau.	3 3/4 x 5 1/2	B-L	B-L 30.	She 1501.	B													
Stoughton	BJ	Own.	3 3/4 x 5 1/2	B-L	B-L 30.	Col 53000.	I													
Traffic	1750	Con N-4.	3 3/4 x 5	Cov.	Cov MUNC.	Rus 3-41.	I													
Transport	26	Bud WTU.	3 3/4 x 5 1/2	Ful.	Ful SU-1.	Clia 1-D.	W													
Traylor	B 1800	Bud WTU.	3 3/4 x 5 1/2	Ful.	Ful LTU 5.	She W-1501.	W													
Triangle	A 1985	Wau BUX.	3 3/4 x 5 1/2	Ful.	Ful LTU 5.	Clia 1-D.	I													
Ugton	E 2250	Wis Y.	3 3/4 x 5	B-L	B-L 31.	Col B-501.	S													
United	30	Her OX.	4 x 5	Ful.	B-L 31.	Col 53000.	B													
U. S. N.	30	Bud.	3 3/4 x 5 1/2	Ful.	Ful LTU 4.	Clia 1-D.	I													
Victor	40 1650	Her O.	4 x 5	Ful.	Ful LTU 5.	Wis 50.	R													
Wachusett	J 2800	Con J4.	3 3/4 x 5 1/2	B-L	B-L 35.	Tim 6352.	W													
Wilcox	BB 2550	Own BD.	4 1/2 x 5 1/2	Own.	Own Q.	Wal 2A.	R													
Winther	34 2450	Wis SU.	4 x 5	Ful.	Own.	Own.	I													
Winther	434 2850	Wis SU.	4 x 5	Ful.	Own.	Own.	I													
Wisconsin	B 1850	Wau Y.	4 x 5 1/4	B-L	B-L 31.	Tim 5511.	W													
Witt-Will	N 2450	Con C-4.	4 1/2 x 5 1/2	B-L	B-L 35.	Tim 6460.	W													

2 TON										2 1/2 TON									
Acme	41	Con S4.	4 1/2 x 4 1/2	B-L	B-L	Tim 6460.	W			Acme	56 3350	Bud EBU.	4 1/2 x 5 1/2	B-L	B-L 50.	Tim 6566.	W		
Autocar	F	Own 2.	4 1/2 x 4 1/2	Own.	Own F.	Own F.	R			Acorn	50 3250	Bud ETU.	4 1/2 x 5 1/2	B-L	B-L 51.	Tim 6560.	W		
Autocar	G	Own H.	4 x 5 1/2	Own.	Own Y.	Own H.	R			Amer. La France	W 3950	Own 2R.	4 1/2 x 6	Own.	Own 2R.	Own 2R.	W		
Autocar	H	Own H.	4 x 5 1/2	Own.	Own Y.	Own H.	R			Armleder	50	Bud EBU.	4 1/2 x 5 1/2	B-L	B-L 51.	Tim			

Commercial Car Specifications—Continued

ENGINE										REAR AXLE									
TRADE NAME AND MODEL	Chassis Price	Make and Model	Bore and Stroke (Ins.)	Clutch Make	Gearset Make and Model	Make and Model	Final Drive	TRADE NAME AND MODEL	Chassis Price	Make and Model	Bore and Stroke (Ins.)	Clutch Make	Gearset Make and Model	Make and Model	Final Drive				
Kimball	AC 3960	Wis TAU.	4 1/2 x 6	B-L.	B-L 50	Tim 6560	W	\$Selden Unit	53	Con L-4	4 1/2 x 5 1/2	B-L.	B-L 51.	Tim 6566	W				
King Zeidler	2875	Con K4	4 1/2 x 5 1/2	B-L.	B-L 51	Tim 6566	W	Sterling	DW15 16	Own CU	4 1/2 x 5 1/2	B-L.	B-L 50	Tim 6560	W				
Kissel	2875	Own 53000	4 1/2 x 5 1/2	W-G.	W-G-T33	Tim 6560	W	Stoughton	F	Own	4 1/2 x 5 1/2	B-L.	B-L 50	Tim 6560	W				
Kleiber	3850	Con L4	4 1/2 x 5 1/2	B-L.	B-L 51	Tim 6566	W	Super Truck	60 D	Wis UAU.	4 1/2 x 6	Ful	Ful GU-5.	She W-21	W				
Krebs	54	Con K4	4 1/2 x 5 1/2	B-L.	B-L 51	Tim 6566	W	Traffic	6000 2145	Con N-4.	3 1/2 x 5	Cov	Cov MUN	Rus 6000	W				
Lange	E 3650	Con K-4	4 1/2 x 5 1/2	B-L.	B-L 51	Tim 6566	W	Traylor	D	3400	Bud ETU	4 1/2 x 5 1/2	M-E	Own D-4-U	She W-21	W			
Larabee	K 5350	Con L-4	4 1/2 x 5 1/2	B-L.	B-L 51	She W-22	W	United	60	Her OX	4 x 5	B-L.	B-L 35	Wis 88E	W				
Mack	AB 3400	Own AB	4 1/2 x 5	Own	Own AB	Own AB	C	Winther	54	Hin 400	4 x 5 1/2	B-L.	B-L 51	She W-21	W				
Master	41	Bud EBU	4 1/2 x 5 1/2	Own	Own AB	Own AB	R	Winther	451	3800	Wis UAU.	4 1/2 x 6	B&B.	B-L 51	Cl.				
Menominee	D	Wis TAU	4 1/2 x 5 1/2	Ful	Ful	Tim 6560	W	Witt Will	SS 3225	Con K-4.	4 1/2 x 5 1/2	B-L.	B-L 51	Tim 6560	W				
Moreland	EXX 3375	Con K-4	4 1/2 x 5 1/2	Own	Cot AU	Wis 8001	W												
Nelson & LeMoon	G3	Con K-4	4 1/2 x 5 1/2	B-L.	B-L 50	Tim 6566	W												
Netco	DH 3500	Con L-4	4 1/2 x 5 1/2	B-L.	B-L 55	Tim 6560	W												
Noble	D 51	Bud ETU	4 1/2 x 5 1/2	Ful	Ful G-7	She W21	W												
Ogden	E2	Con K-4	4 1/2 x 5 1/2	B-L.	B-L 51	Tim	W												
Oshkosh	A 3250	Bud ETU	4 1/2 x 5 1/2	Ful	Ful GU7	Tim 6566	W												
Oshkosh	BBO 3975	Her O	4 x 5 1/2	B-L.	B-L 50	Own BBO	B												
Power	F	Hin HA400	4 x 5 1/2	B-L.	B-L 50	Own BBO	B												
Rainier	R 20 3550	Con K-4	4 1/2 x 5 1/2	B-L.	B-L 51	ul R-4	W												
Rainier	R 20 3650	Con K-4	4 1/2 x 5 1/2	B-L.	B-L 50	Tim 6560	W												
Rowe	CDW 3575	Wis TAU	4 x 6	B-L.	B-L 51	She W-21	W												
Ruggles	40 H	Her O	4 x 5	B-L.	B-L 35	Wis 88EF	R												
Sanford	W25A 3350	Bud ETU	4 1/2 x 5 1/2	Ful	Ful	Tim 6560	W												
Sanford	W25B 3350	Con L-4	4 1/2 x 5 1/2	Ful	Ful	She 21	W												
Schacht	G 3400	Wis UAU	4 1/2 x 6	B&B.	Ful	Own	W												
Selden Unit	50	Con K-4	4 1/2 x 5 1/2	B-L	B-L 51	Tim 6566	W												
Service	61	Bud EBU-L	4 1/2 x 5 1/2	B&B.	B-L 51	Tim 6566	W												
Standard	2 1/2 3 1/2 K	Con K-4	4 1/2 x 5 1/2	B-L.	B-L 35	Tim 6566	W												
Standard	2 1/2 3 1/2 KS	Con K-4	4 1/2 x 5 1/2	B-L.	B-L 35	Tim 6566	W												
Sterling	DW 14	Own FU	4 x 5 1/2	B-L.	B-L 55	Tim 6566	W												
Sterling	DW 14	Own FU	4 x 5 1/2	B-L.	B-L 55	Tim 6566	W												
Sterling	DW 13 D	Own CU	4 1/2 x 5 1/2	B-L.	B-L 50	Tim 6566	W												
Sterling	DW 13 D	Own CU	4 1/2 x 5 1/2	B-L.	B-L 35	Tim 6566	W												
Stewart	7X 2895	Bud HTU	4 1/2 x 5 1/2	Ful	Ful GU-5	Tim 6566	W												
Super Truck	50	3300	Wis TAU	4 x 6	Ful	She W21	W												
Triangle	B 2785	Wau FU	4 x 5 1/2	Ful	Ful GU-7	Cl 2D	I												
Twin City	BW 2800	Own TW	4 1/2 x 6	B&B.	Ful G7	Cl 2D	I												
Union	FLW&FW	3500	Wis TAU	4 x 6	Ful	Ful GU	W												
United	FV 3150	His TAU	4 x 6	Ful	Ful GU	Val 4-R	R												
Victor	70 2650	Her O	4 x 5	B-L.	B-L 35	Wis 66	R												
Victor	60 2400	Her O	4 x 5	B-L.	Ful GU10	Wis 88E	R												
Wachusett	L 3800	Con L-4	4 1/2 x 5 1/2	B-L.	B-L 55	Tim 6560	W												
Ward LaFrance	2B	Own CU	4 1/2 x 5 1/2	B-L.	B-L 51	Tim 6560	W												
White	51 3750	Own GR	4 1/2 x 5 1/2	Own	Own	Own	W												
Wilcox	CC 3000	Own CC	4 1/2 x 5	Own	Own O	Val 25A	R												
Winther	44 3100	Wis SU	4 x 5	Ful	Ful G7	Own	I												
Witt Will	S 2950	Con K-4	4 1/2 x 5 1/2	B-L.	B-L 51	Tim 6560	W												

3 TON															
Acme	K	Con 6B	3 1/2 x 5	B&B.	Cot R	Tim 6511S	W	Acme	90	Con L-4	4 1/2 x 5 1/2	B&B.	Cot S	Tim 6660	W
Acme	60L	Con L-4	4 1/2 x 5 1/2	B&B.	Cot R	Tim 6560	W	Acme	90L	Con B-5	4 1/2 x 6	B&B.	Cot S	Tim 6660	W
Autocar	H	Own H	4 x 5 1/2	Own	Own Y	Own H	R	Acme	90L	Bud YBU	4 1/2 x 6	B-L	B-L 60	Tim 6666	W
Autocar	K	Own H	4 x 5 1/2	Own	Own Y	Own H	R	Acme	90L	Bud YBU	4 1/2 x 6	B-L	B-L 60	Tim 6666	W
Autocar	HPDS	Own H	4 x 5 1/2	Own	Own Y	Own Y	R	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Brockway	K13	Con K4	4 1/2 x 5 1/2	B-L.	B-L 35	Tim 6566	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Brockway	K15	Con K4	4 1/2 x 5 1/2	B-L.	B-L 55	Tim 6566	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Brockway	KR	Con L4	4 1/2 x 5 1/2	B-L.	B-L 55	Tim 6566	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Brockway	KR	Bud ETU	4 1/2 x 5 1/2	B-L.	B-L 51	Tim 6566	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Clinton	65 3550	Con L4	4 1/2 x 5 1/2	B-L.	B-L 51	Tim 6566	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Clydesdale	6	Con L4	4 1/2 x 5 1/2	B-L.	B-L 51	Tim 6566	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Clydesdale	6X	Con K4	4 1/2 x 5 1/2	B-L.	B-L 51	Tim 6566	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Columbia	K 3450	Hin 500	4 1/2 x 5 1/2	Det.	D-G	Val	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Concord	JL 3600	Bud EBU	4 1/2 x 5 1/2	B-L.	B-L 50	Tim 6560	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Corbitt	J	Con L-4	4 1/2 x 5 1/2	B-L.	B-L 51	She W-21	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Day Elder	35	Con EBU	4 1/2 x 5 1/2	B-L.	B-L 51	Tim 6566	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Denby	35	Con EBU	4 1/2 x 5 1/2	B-L.	B-L 51	Tim 6566	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Double Drive	TT 4000	Con K-4	4 1/2 x 5 1/2	Ful	Ful	Cl 2D	I	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Duplex	AC	Bud EBU	4 1/2 x 5 1/2	Det	Own D.T.P.	Own D.T.T.	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Fageol	340 4000	Wau CU	4 1/2 x 5 1/2	B-L.	B-L 50	Val 4	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Fageol	360 5250	Ha S	4 1/2 x 5 1/2	B-L.	B-L 50	Tim 6566	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Forschler	E 4200	Con C-4	4 1/2 x 5 1/2	B-L.	B-L 50	Tim 6566	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
F. W. D.	Y30 3550	Wis A	4 1/2 x 5 1/2	H-S	Cot DAF	Own B	B	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Gary	30	Bud YBU-L	4 1/2 x 6	B-L.	B-L	Tim	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Gottfredson	60	Bud EBU	4 1/2 x 5 1/2	B-L.	B-L 51	Tim 6562	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Gottfredson	60	Hin HA 500	4 1/2 x 5 1/2	Own	Own	She W-21	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Gulder	H 3500	Bud ETU	4 1/2 x 5 1/2	B-L.	B-L 51	Tim 6566	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Hahn	L 3750	Con L4	4 1/2 x 5 1/2	B-L.	B-L 51	Tim 6566	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
International	63	Own 63	4 1/2 x 5	Own	Own 63	Own 63	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Kenworth	KS 3750	Bud EBU	4 1/2 x 5 1/2	B&B.	Cot RU	Own 63	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Krebs	64	Con L-4	4 1/2 x 5 1/2	B-L.	B-L 55	Tim 6566	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Maccar	HI	Wis UAU	4 1/2 x 6	B-L.	B-L 51	Tim 6566	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Maccar	H3	Wis UAU	4 1/2 x 6	B-L.	B-L 51	Tim 6566	W	Acme	90L	Con L-4	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Moreland	AC BU 4700	Con L-4	4 1/2 x 5 1/2	B-L.	B-L 51	Tim 6516	W	Acme	90						

Commercial Car Specifications—Continued

TRADE NAME AND MODEL	Chassis Price	ENGINE			REAR AXLE		
		Make and Model	Bore and Stroke (Ins.)	Clutch Make	Gearset, Make and Model	Make and Model	Final Drive
Oshkosh	5400	Wau	5 x 6 1/4	Ful	Ful	Own	B
Pierce Arrow	WC	Own WC	4 1/2 x 5 1/2	Ful	Own WC	Own WC	W
Republic	20	Con L-4	4 1/2 x 5 1/2	Ful	Con L-4	Con L-4	W
Rehberger	C	Bud YBU	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Rowe	HW	4500 Wis VAU	4 1/2 x 5 1/2	B-L	B-L 55	She W-32	W
Schacht	4400	Con B-5	4 1/2 x 5 1/2	B&B	Own	Own	W
Selden	73	Con B-5	4 1/2 x 5 1/2	B-L	B-L 55	Tim 6666	W
Union	H 3950	Wis VAU	4 1/2 x 5 1/2	Ful	Ful H	Tor E-1	I
Union	HW	4500 Wis VAU	4 1/2 x 5 1/2	Ful	Ful HUI	Wal 5A	R
U. S.	S	Hin 200	4 1/2 x 5 1/2	B-L	B-L 55	She W-32	W
Witt Will	A 4500	Con B5	4 1/2 x 5 1/2	B-L	B-L 60	Tim 6760	W
5 TON							
American LaFrance	V 5500	Own 5R	4 1/2 x 6	Own	Own 5R	Own 5R	W
Atterbury	24E 5500	Con B-7	5 x 6	B-L	B-L 60 Max	Tim 6760	W
Autocar	L	Own Y	4 1/2 x 5 1/2	Own	Own B	Own Y	R
Autocar	M	Own Y	4 1/2 x 5 1/2	Own	Own B	Own Y	R
Available	HIS	Her T-3	5 x 6	B-L	B-L 60	Tim 6760	W
Biederman	T	Con B-7	5 x 6	B-L	B-L 60	Tim 6760	W
Brookway	T	Con B-7	5 x 6	B-L	B-L 60	Tim 6760	W
Brookway	T15	Con B-7	5 x 6	B-L	B-L 60	Tim 6760	W
Clinton	120L 5140	Bud BTU	5 x 6 1/2	B-L	B-L 60	Tim 6760	W
Clinton	120LM 5250	Bud BTU	5 x 6 1/2	B-L	B-L 60 Max	Tim 6760	W
Clydesdale	2	Con B-5	4 1/2 x 6	B-L	B-L 60 Max	Tim 6760	W
Corbett	AA	Con B-7	5 x 6	B-L	N-L 60 Max	She W-51	W
Day Elder	L	Bud BTU	5 x 6 1/2	B-L	B-L 60	Tim 6760	W
Denby	210	Con B5	4 1/2 x 6	Ful	Ful	Con B5	W
Diamond-T	S	Hin Class B	4 1/2 x 6	B-L	B-L 60	Tim 6760	W
Dixon	4490	Con L-4	4 1/2 x 5 1/2	Ful	Ful HUI	Tim 6666	W
Federal	X 2	Con B-5	4 1/2 x 6	B&B	W-G	Tim 6760	W
Garford	68D	Own	5 x 6 1/2	Own	Own 68D	Tim 6760	W
Gary	B50 4850	Bud BTU	5 x 6 1/2	B-L	B-L	Tim 6760	W
G. M. C.	K 101A	Own K101	4 1/2 x 6	Own	Own 101A	Tim 6760	W
G. M. C.	K 101B	Own K101	4 1/2 x 6	Own	Own 101B	Tim 6760	W
Goitredson	100	Bud BTU	5 x 6 1/2	B-L	B-L 60	Tim 6760	W
Gramm Bernstein	100	Con 50	4 1/2 x 6	B-L	B-L 60	Tim 6760	W
Guider	K-5 6250	Bud BTU	4 1/2 x 6	B-L	B-L 60	Tim 6760	W
Hahn	M2 4750	Con B5	4 1/2 x 6	B-L	B-L 60	Tim 6666	W
Hahn	51	Wau EU	5 x 6 1/4	B&B	B-L 60	She W-52	W
Indiana	52	Wau EU	5 x 6 1/4	B&B	B-L 60	She W-52	W
International	103	Own	4 1/2 x 5	Own	Own 103	Tim 6760	W
Kearns	TF	Wis VAU	4 1/2 x 6	Ful	Ful	She W-51	W
Kenwerth	RS 5500	Bud BTU	5 x 6 1/2	B-L	B-L 60	Tim 6760	W
King Zeiler	Goliath	4385 Bud BTU	5 x 6 1/2	B-L	W-G	She W-32	W
Kissel	5300	Con B-5	4 1/2 x 6	B-L	B-L 60	Tim 6760	W
Kleiber	84	Con B5	4 1/2 x 6	B-L	B-L 60	Tim 6666	W
Krebs	84	Wau EU	5 x 6 1/4	B-L	B-L 60	Tim 6760	W
Luedinghaus	G7	Wis RBU	5 x 6	B-L	B-L 60	Tim 6760	W
Macar	AC 5500	Own AC	5 x 6	Own	Own AC	Own AC	C
Mack	61	Bud YBU	4 1/2 x 6	Ful	Ful	Tim 6760	W
Master	61	Bud YBU	4 1/2 x 6	Ful	Ful	Tim 6760	W
Moreland	RX 5000	Con B-5	4 1/2 x 6	B-L	B-L 60	Tim 6666	W
Nelson & LeMoon	G5	Con B-5	4 1/2 x 6	B-L	B-L 60	Tim 6760	W
Northway	C5 4500	Own C	4 x 6	B-L	B-L 60	Tim 6760	W
Ogden	G	Con B-5	4 1/2 x 6	B-L	B-L 60	Tim 6760	W
Pierce Arrow	RD 5000	Own RD	4 1/2 x 6 1/2	Own	Own RD	Own RD	W
Rehberger	D	Bud BTU	5 x 6 1/2	B-L	B-L 60	Tim 6760	W
Rowe	FW 4850	Bud BTU	4 1/2 x 6	B-L	B-L 60	She W51	W
Sandow	L	Wis RAU	5 x 6 1/2	B-L	B-L 60	Tim 6760	W
Sandow	W50	Con B-7	5 x 6	Ful	Ful H	She W-51	W
Schacht	4600	Wis VAU	4 1/2 x 6	B&B	Con B-7	Tim 6760	W
Selden Unit	90	Det	5 x 6	B-L	B-L 60	Tim 6760	W
Service	103	Bud YBU-L	4 1/2 x 6	B&B	B-L 60	Tim 6760	W
Sterling	EW23	Own DU	4 1/2 x 6 1/2	H-S	B-L 60	Tim 6760	W
Sterling	EW23	Own DU	5 x 6 1/2	H-S	B-L 60	Tim 6760	W
Sterling	EC23	Own DU	4 1/2 x 6 1/2	H-S	Own	Own	C
Sterling	EC24	Own DU	5 x 6 1/2	H-S	Own	Own	C
Super Truck	100 4500	Wis RAU	4 1/2 x 6	Ful	Ful H	She W-51	W
Transport	75	Bud YBU	4 1/2 x 6	B&B	Con B-7	Tim 6760	W
Traylor	F 4700	Bud YBU	4 1/2 x 6	B-L	B-L 60	She W-32	W
U. S. S.	Special	Hin HA200	4 1/2 x 5 1/2	B-L	B-L 55	She	W
United	100	Her L	4 1/2 x 5 1/2	B-L	B-L 55	Wis 1800	R
Victor	85 3750	Con LA	4 1/2 x 5 1/2	Ful	Ful GU7	Wis 160B	R
Ward LaFrance	5B	Own EU	5 x 6 1/2	B-L	B-L Max	Tim	W
White	45 4500	Own GR	4 1/2 x 5 1/2	Own	Own 45	Own 45	R
Wilcox	F 4350	Bud ATU	4 1/2 x 6 1/2	Own	Own EA	Wal 5A	R
Winther	104 5000	Wis RAU	4 1/2 x 6	B&B	B-L 60	Con	I
Witt Will	A 4500	Con B5	4 1/2 x 6	B-L	B-L 60 Max	Tim 6760	W
5 1/2, 6 and 7 TON							
Acme 125	Con B-5	4 1/2 x 6	B&B	Cot T	Tim 6760	W	
Amer. LaFrance V6 ton	5750	Own 5R	4 1/2 x 6	Own	Own 5R	Own 5R	W

KEY OF ABBREVIATIONS TO COMMERCIAL CAR SPECIFICATIONS

TIRES:
\$1—Unless marked otherwise all tires are solids.
*—Pneumatics standard equipment.
†—Pneumatics at Extra Cost.
†—Dual on Rear.

ENGINE:

Bud—Buda Co., Harvey, Ill.
Con—Continental M. Corp., Detroit, Mich.
D—Head and Side.
GBS—Golden, Belknap & Swartz Co., Detroit, Mich.
H—Overhead.
Has—Hall-Scott Motor Car Co., Berkeley, Cal.
Her—Hercules M. Mfg. Co., Canton, Ohio.
Hin—Hinkley Motors, Inc., Detroit, Mich.
H-S—Herschell-Spillman Motor Co., North Tonawanda, N. Y.
H-C—Hall-Scott Motor Co., Berkeley, Cal.
Kni—Yellow Sleeve Valve Eng. Works, East Moline, Ill.
L—L-Head.

Lyc—Lycorning M. Corp., Williamsport, Pa.
Mid—Midwest Eng. Co., Indianapolis, Ind.
FP—Full Pressure to all bearings including wrist pins.
PC—Pressure to all crankshaft and connecting rod bearings.
PS—Pressure with splash.
SP—Circulating splash.
T—T-Head.
Wau—Waukesha M. Co., Waukesha, Wis.
Wis—Wisconsin M. Mfg. Co., Milwaukee, Wis.
Yell—Yellow Sleeve Valve Eng. Works, East Moline, Ill.
X—Sleeve.
REAR AXLES:
1/2—Semi-Floating.
3/4—Three-Quarter Floating.
Atl—Atlas Axle Co., Wilmington, Del.
Clk—Clark Equip. Co., Buchanan, Mich.
Cia—Columbia Axle Co., Cleveland, O.
Con—Continental Axle Co., Edgerton, Wis.
C—Chain.

B—Straight Bevel.
D—Dead.
Eat—Eaton Axle Co., Cleveland, Ohio.
Fli—Flint Motor Axle Co., Flint, Mich.
F—Floating.
Huc—Sheldon Axle & Spring Co., Wilkes-Barre, Pa.
I—Internal Gear.
LM—L. M. Axle Co., Cleveland, Ohio.
P—Spur Gear.
R—Double Reduction.
Rus—Russell Motor Axle Co., Detroit, Mich.
S—Spiral Bevel.
Sal—Salisbury Axle Co., Jamestown, N. Y.
Shd—Sheldon Axle & Spring Co., Wilkes-Barre, Pa.
Shu—Shuler Axle Co., Inc., Louisville, Ky.
Std—Standard Parts Co., Cleveland, Ohio.
Tim—Timken Detroit Axle Co., Detroit, Mich.
Tor—Eaton Axle & Spring Co., Cleveland, Ohio.
Vul—Vulcan Motor Axle Co.
Wal—Walker Axle Co., Chicago, Ill.
W—Worm.
Wis—Wisconsin Parts Co., Oshkosh, Wis.

Current Electric Truck Specifications

NAME AND MODEL NUMBER		Total Weight Resting on Four Tires	Chassis Weight Exclusive of Battery	Minimum Load Capacity	Maximum Load Capacity	Chassis Price	Maximum Speed	Location of Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Springs	Front Tires	Rear Tires	Steering Gear	Wheelbase	Per Cent of Weight on Rear Wheels
Autocar	E 1F					2400				G-E	G-E		R	Own	Row	34x4	34x5	Ross	107	60
Autocar	E 2D					2800				G-E	G-E		R	Own	Row	34x5	34x6	Ross	120	60
Autocar	E 3H					3200				G-E	G-E		R	Own	Row	34x5	36x8	Ross	128	60
Autocar	E 4Y					4000				G-E	G-E		R	Own	Row	34x6	36x6½	Ross	138	60
Autocar	E 5M					4300				G-E	G-E		R	Own	Row	36x7	36x7½	Ross	138	60
C-T	H 1	5600	2400				14	A	55	G-E	Own	4	Own	F	Shel	36x3	36x3½	W	108	68
C-T	F-1.5	6600	2800				14	A	60	G-E	Own	4	Own	F	Shel	36x3	36x4	W	94	65
C-T	H-1.5	6600	2800				14	A	60	G-E	Own	4	Own	F	Shel	36x3	36x4	W	116	71
C-T	F-2	8000	3100				14	A	50	G-E	Own	4	Own	F	Shel	36x3½	36x5	W	96	66
C-T	H-2	8000	3100				14	A	50	G-E	Own	4	Own	F	Shel	36x3½	36x5	W	124	70
C-T	F-4	11950	4200				12	A	50	G-E	Own	4	Own	F	Shel	36x4	36x4½	W	116	68
C-T	A-7	17700	5800				11	A	45	G-E	Own	4	I	D	Shel	36x6	36x4½	W	122	60
C-T	F-7	17900	6000				11	A	45	G-E	Own	4	Own	F	Shel	36x5	36x5½	W	136	68
C-T	A-10	22250	6500				10	A	45	G-E	Own	4	I	D	Shel	36x7	36x5½	W	132	59
C-T	F-10	22750	7000				10	A	45	G-E	Own	4	Own	F	Shel	36x6	36x6½	W	152	68
Kelland	AT		1950	1000	1500		15	S	50	G-E	G-E	4	R	Flot	Mer	34x3	34x3	Ross	102	60
Kelland	BT		2050	1500	2000		15	S	50	G-E	G-E	4	R	Flot	Mer	34x3½	34x3½	Ross	102	60
Kelland	CT		2150	2000	2500		15	S	50	G-E	G-E	4	R	Flot	Mer	34x4	34x4	Ross	102	60
Kelland	AH		2500	1000	1500		15	A	45	G-E	G-E	4	C	D	Mer	36x3	36x3	Hin	106	60
Kelland	BH		2600	1500	2000		15	A	45	G-E	G-E	4	C	D	Mer	36x3½	36x3½	Hin	106	60
Kelland	CH		2700	2000	2500		15	A	45	G-E	G-E	4	C	D	Mer	36x3½	36x4	Hin	106	60
Kelland	ATS		2200	1000	1500		15	H & S...	50	G-E	G-E	4	R	Flot	Mer	34x3	34x3	Ross	102	60
Kelland	BTS		2300	1500	2000		15	H & S...	50	G-E	G-E	4	R	Flot	Mer	34x3½	34x3½	Ross	102	60
Kelland	CTS		2400	2000	2500		15	H & S...	50	G-E	G-E	4	R	Flot	Mer	34x3½	34x4	Ross	114	60
Lansden	Century		1700		1250	1600	15	S	60	G-E	Own	4	R	Flot	S P	32x4½	32x4½	Ross	108	50
Lansden	Century		1950		2000	1850	15	S	60	G-E	Own	4	R	Flot	S P	33x5	33x5	Ross	112	50
Lansden	Marathon		2900		2000	1850	14	A	50	G-E	Own	4	C	D	S P	36x3½	36x4	Bay	108	60
Lansden	Marathon		4400		4000	2250	13	A	50	G-E	Own	4	C	D	S P	36x4	36x3½	Bay	120	60
Lansden	Marathon		5700		7000	2950	11	A	45	G-E	Own	4	C	D	S P	36x5	36x5½	Bay	133	60
Lansden	Marathon		7500		10000		10	A	40	G-E	Own	4	C	D	S P	36x6	36x6½	Bay	146	60
O.	B-B						13			G-E	Own		C	D		36x4	36x3½	Own	107	
O.	B-C						11			G-E	Own		C	D		36x5	36x4½	Own	135	
O.	B-D						10			G-E	Own		C	D		36x6	36x5½	Own	143	
Steinmetz	15	6800	2300	1000	2250	1850	18	H & S...	45	Own	Own	4	R...	Own	Lig	32x4½*	32x4½*	Lav	111	55
Walker	12		1900		1000		15	H & S...	50	G-E	Own	4	Tim	Det	32x3	32x3½	Ross	104	66	
Walker	15		2800		1500		14	A	50	West	West	5	Own	Own	Math	34x3	36x3½	Ross	94	66
Walker	22		3000		2000		13	A	50	West	West	5	Own	Own	Math	34x3½	36x4	Ross	101	66
Walker	42		4200		4000		13	A	50	West	West	5	Own	Own	Math	36x4	36x6	Ross	114	66
Walker	P		6000		7000		11	A	40	West	West	5	Own	Own	Math	36x5	38x5½	Ross	131	66
Walker	N		6700		10000		10	A	40	West	West	5	Own	Own	Math	36x6	38x6½	Ross	141	66
Walter	HD	6800	2300		2000	2200	16	A	60	Diehl	G-E	5	B			32x3½	32x4	Ross	98	60
Walter	EN	13200	4400		5000	3100	15	A	50	G-E	G-E	5	Own	D		36x4	36x7	Gem	114	60
Walter	EL	16800	5000		7000	3700	13½	A	50	G-E	G-E	5	Own	D		36x5	36x4	Gem	132	60
Walter	ES	23600	7200		11000	4500	12	A	50	G-E	G-E	5	Own	D		36x6	40x6	Ross	150	70
Walter	ER	28400	7500		15000	4800	11	A	50	G-E	G-E	5	Own	D		36x7	40x7	Ross	150	70
Ward	A211	4650	1800	600	1150		15	S	75	G-E	Own	4	W	Shel	Shel	32x3	33x3½	Own	88	56
Ward	B-222	6000	2300	1010	1700		14	S	84	G-E	Own	4	W	Shel	Shel	32x3½	32x4	Own	91	62
Ward	C-211	8000	2670	2170	2880		13	S	65	G-E	Own	4	W	Shel	Shel	32x3½	34x5	Own	96	64
Ward	E-211	12000	3570	4480	5430		12½	S	56½	G-E	Own	4	W	Shel	Shel	34x4	36x6	Own	108	65
Ward	G-211	16000	4500	6560	7760		11	S	44	G-E	Own	5	W	Shel	Shel	36x5	36x8	Own	120	68
Ward	J-211	22500	6630	9500	11200		10	S	39½	G-E	Own	5	W	Shel	Shel	36x6	36x10	Own	136	70
Ward*	M-211	30000	8430	13780	15920		9	S	36	G-E	Own	5	W	Shel	Shel	36x7	36x7½	Own	152	71

NOTE: Battery Equipment on all above makes is at the option of the purchaser. Battery Location Abbreviations: A—amidships, H—under hood, and S—under seat.

Complain to I. C. C.

The Interstate Commerce Commission has been requested, in a complaint filed by three Norfolk warehouse companies, to order railroads serving the Virginia port to perform the same service in connection with export tobacco storage at inland points as is performed by the Chesapeake & Ohio Railway at Newport News.

Jones & Co., Inc., the Norfolk Warehouse Corp., and the Imperial Tobacco Co., Ltd., are the complainants. The defendants include the Atlantic Coast Line, Chesapeake & Ohio, Norfolk & Western, Norfolk Southern, Norfolk & Portsmouth Belt Line, Seaboard Air Line, Southern, and Virginian railroads.

The complaint sets forth that the Chesapeake & Ohio allows 25 cents per hogshead and 10 cents per case to public warehouses for loading from warehouses to cars when tobacco, bound for Newport News for export, is stored at inland points en route and then is reshipped to the waterfront.

Norfolk warehousemen contend they are entitled to the same service in that the two ports are competitive and the freight rates on the traffic from points of origin to shipside are identical. On this ground they contend that the added service at Newport News is a discrimination, and detrimental to their business. Rules, regulations and practices are sought for Norfolk on the same basis as they apply on the Chesapeake & Ohio at Newport News.

Lee Brothers Sell Unit

Lee Brothers, Inc., New York City warehousemen, have sold, for a reported price of \$1,000,000, its twelve-story fireproof storage and office building—the tallest structure of its kind in the Harlem section of the metropolitan district—at Park Avenue and 125th Street. The Lee company reserved the right to take a short-time lease on such of the premises as the company now occupies, but as the space is gradually vacated

it will be converted by the new owners into offices.

The Lee company purchased the building in 1922 after having occupied it under lease for nearly ten years. Originally it was used entirely for storage purposes, but more latterly various sections were converted for use as offices for various companies.

Texas Warehouse Department

The Texas Legislature has passed a bill under which the State Department of Markets and Warehouses is merged into the Department of Agriculture. The functions of the former are not changed but are being correlated with those of the Department of Agriculture with the objective of rendering it more efficient for Texan farmers, it is explained. The provisions are in keeping with one of the planks of the political platform of the State's woman Governor, Miriam A. Ferguson.

Public Warehousing and Economic Distribution

Number 3

How Warehousing the Goods Promotes Continuous Factory Operation

By H. A. HARING

THE storage of goods began for the purpose of saving the flood of the crops at harvest time for man's use throughout the fifty-two weeks of the year. The principle of simple storing is, without question, as old as man: older than man, in fact, if it be granted that insects or beasts preceded him on earth. Thus to preserve surpluses of food is fundamentally human—it is done by the most careless of savages and by many animals. Such hoarding of food has become the basis of much warehousing in our own day, not only that in the cold storage house but the grain in elevators, the potatoes and peanuts, the oils and canned goods to be found in merchandise warehouses.

To preserve food supplies from the day of harvest until the day of demand is commonly granted to be a function of warehousing, but there is not found, outside those who know modern warehouses, a proper conception of the warehouse as related to manufacturing.

It is recognized by all that whatever has its origin in agriculture must be harvested at the time set by Nature for ripening. It is then stored, thenceforth to be meted out as needed. This condition applies equally to food-stuffs and to those raw materials of manufacturing which come from the soil or from Nature—cotton, tobacco, wool, flaxseed, furs, timber, fish, natural ice, turpentine, and numberless others. For each of these products man re-

sorts to storage to offset the seasonal element in the crop.

So completely, in fact, has warehousing of raw materials been incorporated into manufacturing that often no thought is given to its importance. The manufacturer of paints gives no consideration as to whether it is the "season" for linters or for zinc. The maker of varnishes assumes that linseed may be purchased without regard to the harvest in Minnesota. Nor does the textile maker give thought as to whether it is the month for cotton picking or wool shearing or silk cocoons. So fully does the manufacturer depend upon warehousing for the supply of his raw materials that he proceeds with about the unconcern of the housewife who telephones for lettuce and tomatoes every morning of the year, knowing that her grocer will produce them from some corner of the country.

The larger corporations in their effort to control all processes from source to consumer are obliged to give thought to raw materials, but the ordinary rank and file of manufacturers purchase their raw materials from "the trade." They are therefore saved all concern as to the methods by which these materials enter the stock-room of the factory. So far as regards its raw materials, the manufacturing plant rests secure upon what some other business man has housed away in the commodity warehouse somewhere in the country.

Warehousing Manufactured Products

EXTENSION of the warehousing principle to their own output is, however, a comparatively recent development of manufacturing. The warehousing of raw materials is more the concern of those who sell to manufacturers than of the factory itself, but the warehousing of what the factory produces is, within a single generation, a distinctly new phase of American manufacturing. It constitutes the "distribution problem" of the manufacturer of today.

The warehousing of manufacturers

has, of course, long existed. The implement makers of fifty years ago, following the Civil War period, first coped with warehousing in the developing agricultural States of the Mississippi Valley; their efforts have been followed by others; and yet, relatively, it is only within recent years that public commercial warehousing for manufacturers has assumed real importance in America.

Rising costs and factory cost accounting brought to the fore to all manufacturers the vital necessity of operating the plant continuously. Idle machinery

and idle buildings loomed large in the red-inked figures of profit and loss when once the factory had installed an accounting system that laid against unit of output its proportion of overhead and plant maintenance.

The first thought of every factory was to enter distant and then the foreign markets—to enable it to meet business competition at those distant and foreign points. It was sought to find, with regard particularly to foreign markets, as in South America or South Africa, an outlet for goods which were "out of

Public Warehousing and Economic Distribution

season" at home; in the Orient, a public eager to adopt American-made patterns. For manifold reasons, needless to recount at this time, the foreign marketing of their goods has brought to American manufacturers heavier rather than lighter factory problems, and, following 1919 and 1920, they have turned their backs to such far distant consumers and have more than ever concentrated attention on the home demand.

The necessity of operating the plant full-time still existed. If some far-away, half-mythical market across the seas would not consume enough goods to keep the factory whirring twelve months of the year, the solution must be found, somewhere and somehow, while supplying the home market.

It has been in the solving of this dilemma that manufacturers have come to comprehend the advantages of the public warehouse method of distribution.

They have in such large numbers been forced to an identical policy that the commercial warehouse has become the largest factor in the newer type of manufacturing. The public warehouse of today has an importance never before attained for manufactured goods.

To the manufacturer has come, out of this condition, a distinct "distribution problem." Ten years ago it hardly existed for him. Six years ago he was barely conscious of it. Today it is the biggest element in the distribution of manufactured goods in this country.

Sales Conditions

WAREHOUSING for manufacturers arose from new selling conditions. Hand-to-mouth buying, advertising of brands, and the principle of quick stock turnover, combined to bring to the factory a new demand. In order to satisfy the new type of customer it became imperative that delivery must be quicker than ever before, at the very time that quantities were growing less per order.

Each manufacturer knows for his own industry the problem of multitudinous small orders. It may not be surprising, although it is most interesting, to know that all manufacturers, big and little alike, stand aghast at the condition. The country's leading maker of small tools, with 17,000 items in the factory catalog, finds its average factory order (1923) to be under \$3, with 5000 orders a month of less than \$1 apiece. Our principal electrical manufacturer, with many contracts each year running into the millions, yet finds (1924) that its average shop order means but \$75. The same manufacturer books each business day more than 1000 orders of less than \$10. With both these concerns, furthermore, these averages are below those which formerly prevailed, that sag in level being in the face of rising price levels.

Never has insistence of customers been so strong as it now is for immediate delivery. Says the Chicago manager of one of the largest manufacturing corporations:

"One-fourth of our incoming telephone calls are the question 'Have you in stock' this or that? For most of them the questioner does not even give his full firm name, and all of them are of the sort that we are powerless to follow up. If we are able to reply 'Yes,' the order

"Taking Up the Slack"

IN this article on how public warehousing of goods promotes steady factory operation for the manufacturer Mr. Haring points out that the commercial storage plant "takes up the slack" for the makers of commodities. He says at one point:

"As the goods are finished they are shipped. With wise allotment of such warehouses, the goods are always available for market, not on the premises of the maker, but in warehouses that stand nearer to the market than the factory itself.

"Allocation is made with due relation to advertising effort, branch agencies, freight rates, and particularly with regard to likely transportation delays."

follows; but when we say 'No' the matter ends. Some competitor, we know, next gets the same question.

"We carry 28,000 items in Chicago stock. This is by far the most complete line in the West, but it is humanly impossible to have everything all the time."

Such is the nature of buying today. The manufacturer's problem is the task of accumulating spot stocks at the marketing centers. It is first and last a public warehousing task.

With only few exceptions, makers of goods can secure national distribution only by providing spot stocks at convenient points, allocated with reference to demand and with due regard to freight rates. They dare not endanger a market by trusting small shipments, miscellaneous shipments or less-carload freight shipments to the carriers all the way from factory to market. Too many uncertainties intervene and too many disappointments follow. These vexations may, of course, after lengthy investigations, be explained away and the fault for the delay may be lodged against the proper culprit. The explanation, however, never satisfies the cus-

tomers. It may read excellently as an excuse for non-performance, but it does not constitute service. It fails wholly, too, to reimburse the factory for lost sales.

The advertising of wares has immensely aided the public warehouse industry. No lesson has been more distinct to national advertisers than that goods must be available to supply newly created demands. The goods must be immediately at hand and in quantities sufficient to cover the market. If they fail in either of these particulars the advertising becomes sheer waste. Demand seldom is so specific for a particular brand that it will continue for what is not readily procurable.

This lesson was in November-December, 1923, brought home to a Boston manufacturer of toilet goods who had determined to develop Indiana more thoroughly than had been possible from his Chicago agency on one side and his Cleveland agency on the other. He accordingly planned an Indianapolis branch. Through the usual channels an advertising campaign was projected for the two months preceding Christmas to cover all Indiana and western Kentucky, but unexpectedly the opening of the Indianapolis agency was delayed until January. No one at the factory had the forethought (1) either to cover the Indianapolis territory with spot stocks of goods, or (2) to cancel the advertising campaign. As a result the copy ran five weeks in most cities and six weeks in others before one of the dailies, through its business manager, became alive to the situation. His telegraphic query to the Boston office led to a wholesale cancelling of contracts for space—but not early enough, of course, either to save the wasted expense or to supply the demand created by the advertising.

Stronger always than the advertising demand for spot stocks is the ever-present working of desire for stock turnover. Stressing the turnover results in small-lot buying. Frequency of "turn" is effected by having small stocks for the "turn." The customer buys less, the retailer stocks less, the jobber orders less—although each of them buys more frequently in order to be always in stock.

Through the long process of backing up the buying of goods there has come to the factory, as the ultimate source of supply, the burden of providing the spot stocks from which orders may be filled. The manufacturer of 1925 is apparently to have no escape from the necessity of holding adequate stocks at strategic centers. Neglect to do so is tantamount to conceding the trade territory to rival makers of the goods.

(Continued on page 52)

For Traffic and Sales Managers

A Series of Articles

By H. A. Haring

On the Economies to Be Derived by Distributing Commodities Through Public Warehouses

BEGINNING with the April issue, *Distribution & Warehousing* commenced publication of a series of articles, written from the national shipper's viewpoint on some phase of the commercial warehouse system of routing goods from factory to retailer and consumer.

This new series will continue during the coming months and will give traffic and sales managers information on public warehousing that has never before been assembled in any publication.

The first article, in the April number, pointed out Savings in Cartage Costs As Made Possible by Judicious Selection of Warehouses.

The second article, in the May issue, told "How Staggering of Stocks by Shippers Will Cut Down Cost of Taxation."

The third article, beginning on page 49 of this June number, points out how routing goods through public warehouses promotes factory operation.

In following issues, although not necessarily in the order as here set down, will appear articles which may be summarized as follows:

4. Public Warehousing As a Safeguard Against Moral Risks—Theft of Goods From Stock, Hazards of Tampering With Goods on Which Banks Have Made Loans, Fires of Questionable Origin, Etc.

5. How to Advertise Your Warehoused Stocks So As to Swell Your Sales to Get Business Which You Are Now Missing, Etc.

6. Custodian Warehousing (Sometimes Called Field Warehousing) As a Little-Understood Opportunity for Factories That Are Borrowers From Banks.

7. How Warehoused Stocks Have Saved Markets When the Factory Has Burned or Been Seriously Crippled.

8. How Public Warehousing of Goods Costs Less Than Private Branch Storerooms.

9. The Savings From Low Insurance Rates of Public Warehouses.

10. Illustrations of How Spot Stocks in Public Warehouses Can Save a Market.

11. Examples of Financing the Factory Through Warehoused Stocks, Especially Where the Factory Has Failed to Get At Home All the Bank Aid It Needs.

12. How Spot Stocks in Public Warehouses Help Sales Distribution, Cut Down Sales Expense, Increase Mobility of Goods, Increase Sales, Etc.

13. Examples of Where Public Warehousing Costs Less Than Private—Based On Experiences of Distributors Who Have Tried Both Systems.

The Author:

H. A. Haring has for two years been investigating all phases of public warehousing and has interviewed hundreds of traffic and sales representatives of national distributors and many public storage executives. He is recognized as an authority on the subjects of the series which he is writing for *Distribution & Warehousing*.

Mr. Haring's articles will be a comprehensive "Outline of Distribution With Relation to Public Warehousing."

***Those Who Do Not Receive Distribution & Warehousing Regularly
Should Enter Subscriptions at Once as Few Copies Are
Printed Beyond Actual Requirements***

A subscription—price, \$2—commencing with the January, 1925, issue will bring you the 1925 Warehouse Directory, published as part of that number

Public Warehousing and Economic Distribution

Factory Costs Lowered by Warehousing

THE oddest thing about the "distribution problem" for the manufacturer is that, whereas it rose from selling conditions, it lowers costs of making the goods. To provide spot stocks began as a knotty problem in distribution. Every factory that works out a solution is surprised to find that in the end benefits come to the direct fabrication processes.

The factory is a place to make—not to sell. It therefore regards as a nuisance the demand of its sales department for spot stocks just to meet the whims of the customer who will not order enough goods at one time; it is apt to believe that ordinary freight shipment is good enough today, exactly as it was twenty years ago; its whole attitude is that manufacturing costs can be kept down by not disrupting the "works schedule."

Great, therefore, is the surprise of those factories that have deliberately faced the situation as it exists on the firing line of marketing the goods. It is found, with few, if any, exceptions, that public warehousing of goods at distant points dovetails nicely into the greatest demand of factory management—which is evenness of operation.

In order to grasp the bearing of the "distribution problem" on the manufacturing process it may be worth while to remember the contrast between manufacturing and agriculture.

With the products of the farm and forest there occurs a seasonal fluctuation of supply. The crop intervals are beyond man's control. He may garner only at the stroke of Nature's clock, and he must somehow contrive to store the crop so as to cover his needs until the next striking time occurs. With every product controlled by Nature the supply is a sort of tidal wave subject to the variations of climate and latitude. Man may alter to some extent the demand; he can do little with the supply.

With manufactured goods exactly the opposite is the condition. Here it is the production process that is controllable, while consumption shows many seasonal (or similar) variations.

There are a limited number of manufacturing processes and some mining industries which are necessarily as seasonal as agriculture because of their dependence upon the weather, availability of raw material, and the like (such as out-of-door brick making, glass making, mining iron ore from open pits, canneries, fish curing, etc.), and yet this type does not total enough volume to alter the general statement that manufacturing processes ought to continue fairly even throughout the twelve months.

The ideal of every factory management is such a level of output that shall see an uninterrupted flow of raw ma-

terials through the plant, with a similar regularity of shipment from the finishing department. Such evenness of production is emphasized—almost demanded—by the telling curves of cost accounting. Every industry seeks this ideal condition—an ideal that too oft is attained by making quantity contracts near the level of factory costs merely for the sake of "keeping the plant running."

Within very recent years it was not the usual thing to make up goods very far in advance of orders. American factories unconsciously followed the English

For Traffic and Sales Managers

THIS is the third of a series of articles which Mr. Haring is writing for traffic and sales managers on the subject "Public Warehousing and Economic Distribution." This present test deals with promotion of factory operation by taking advantage of the commercial storage system of distribution.

In the April issue of *Distribution & Warehousing* Mr. Haring told "How Judicious Use of Public Warehouses Economizes on Cartage Costs."

In the May number his topic was "How Staggering of Stocks by Shippers Will Cut Down Cost of Taxation."

In the forthcoming July issue Mr. Haring will discuss "Public Warehousing as a Safeguard Against Moral Risks."

Other texts of this series will be published during the months ahead, as set down on page 51.

factory system of alternating high-speed and overtime periods with those of total idleness.

The farm implement business was an extreme instance of such a process. During the spring and summer this industry formerly ran at mad speed with two and three "shifts" every twenty-four hours. Every effort was made to supply the demand for implements and accessories whose peak came in July and August. Following the wake of these months there ensued each year four or five months of vanishing demand—a situation which the factories met by reduced operation, either closing down altogether or working only part time.

Similar conditions obtained in other lines, notably with wearing apparel.

The manufacturers of radiators and heating plants even today are considerably perplexed to keep their foundries

in operation during the spring and summer months. For, although building activity is heaviest during that period of the year, owners and contractors postpone installation of these items until autumn. In the construction work provision is duly made for the heating plant, but actual setting-up is held off just as long as possible for the purpose of deferring the date when payment falls due for the materials.

One leading maker of radiators has for two or three seasons endeavored to give long-time datings for deliveries during the months indicated, while for one of their products an additional discount is offered. The results have helped to average the foundry-floor work for the year, and there yet remains a long period of summer dullness (or idleness) which the company has not yet had the courage squarely to face and solve in the only practicable manner.

The radio industry, too, gives most strikingly another example. Radio sales begin with September and October, as chilly evenings cut off enjoyment of outdoors, with volume gradually swelling through December. After the holidays sales tend downward until March, when a low level is reached which prevails on through August. Of all radios sold 60 per cent are marketed during Nov.-Jan.

In the summer of 1924 one principal maker of radio sets closed down his factories, as he had done previous seasons. Not until September did the machinery begin to run, and then, in mad haste, new buildings were rushed to completion with night shifts of workmen fabricating radios for a clamoring public.

It is probably not an exaggeration to state that this manufacturer could have doubled his 1924 volume had he been in position to ship all his orders during November and December, whereas when the seasonal slump came in the late winter he had built up an organization of workmen and equipment far too great in capacity for the demand.

For 1925 this maker has announced that the factories will run continuously through the summer, with warehousing of the product in readiness for autumn and winter.

It is not wholly tyranny of style that makes seasonal goods. The instances of heating radiators and radio sets illustrate seasonal demands which are thoroughly the outgrowths of climate.

Other common examples are baseball and athletic goods of every description, Christmas toys and novelties, clothing and millinery, coal and ice, candy and pancake flour and sausage.

In the automobile industry manufacturing does not proceed beyond the estimate of sales for the season. The "improvements" shown with each "model" automatically ruin the salability of former types, which become at once "old

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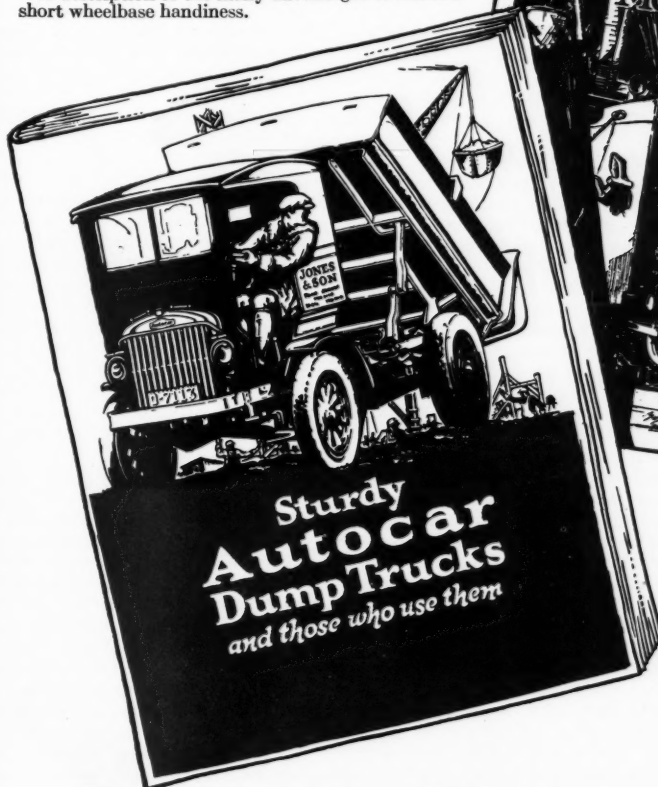
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Public Warehousing and Economic Distribution

models"—an illustration again of the workings of style-value.

Candy making is another interesting example of how the warehouse has completely changed manufacturing methods, the warehouse in this instance being the cold storage house.

Until two decades ago the candy makers operated overtime during October and November, with frantic attempts to work twenty-four hours a day during December in a mad endeavor to supply the Christmas demand for their goods. For with candy the maximum of demand reaches the trade in December, largely within a single week. Candy is in general consumed more largely in winter than in summer, with December requiring three or four times as much as any other one month.

Cold storage warehousing brought salvation to the candy makers by introducing into their industry an evenness of manufacturing such as had never been known. Chocolates under use of cold storage for the holiday trade are manufactured in July and August. Shipment in then made in carload quantities to cold storage warehouses at convenient centers of trade, there to be held until wanted for the Christmas trade.

The public warehousing of candy has enabled manufacturers to run their plants twelve months. It has also taken out of the industry the rush-work months of the autumn, which for candy were particularly bad because in this business "extra help" is not readily secured of such character as to pass the sanitary inspection for health, etc.

Candy thus made for holding is made a bit differently from that which is to be immediately consumed. It is hard. Its composition requires a mellowing or curing, without much moisture—a slow process that extends over three or four months. During this period it is stored at temperatures of from 55 to 60 deg. Fahr. Candy does not, therefore, come within the definition of cold storage foods in the law (which defines "cold storage foods" as such only when the temperature is 45 deg. or less), and cold storage candy does not come to the consumer with a label reading "Cold Storage Food." Were it necessary for candy to bear such a label, it is barely possible that prejudice against cold storage would influence the candy trade.

Every irregularity in manufacturing adds to costs. Continuous and evenly paced operation is the essential of low costs, or, as phrased in a standard textbook, "uninterrupted operation is the keynote of manufacturing profits." Investment in buildings and equipment has become so huge that when the shop stands idle the overhead gnaws ruthlessly into the margin of earnings during the months of operation.

Another characteristic enters seasonal

operation. This is the specialization of the manufacturing processes—a lesson brought home to such factories as have tried to save themselves by turning to "off-season" products.

The more highly specialized the output of the plant, the more is operation divided and sub-divided into detailed processes. All tendencies of quantity production are that a workman shall perform fewer operations but shall become highly proficient on a single task. The factory thereby grows less and less flexible. Machines, too, are designed for a single product and they cease to be adaptable to another. In cases where the machinery is adaptable, or where

ing; renewed attention is therefore being given to the costs of making the goods.

Of all devices to cut manufacturing costs none has made greater headway than schemes to yield even and regular factory operation. Penalty always follows "rush" work. Accidents increase, costs mount, quality of output falls under overtime operation or under the companion evil of "extra help."

The practical alternative is deliberately to estimate the year's demand for the goods and run the plant at that even pace which promotes manufacturing profits. Irregular operation gives way to every week "work." The output under such a plan is warehoused. It is not stored at the factory. Herein lies the distinction that separates the method of today from that of ten or twenty years ago.

A manufacturer of threshing machinery, in personal talk, made this suggestive comment:

"The best thing for the factory is to ship the goods away. There is something stimulating about seeing loaded freight cars leave the plant—even if we are warehousing them somewhere else.

"It's not only the employees, either, for I know our bankers feel better with our goods in a Minneapolis storage plant than in our own factory buildings. There's not a bit of difference, but just the same they seem to believe the threshers are in the process of being sold once we have billed them out."

Deficiencies of Factory Storage

AS manufactured goods are shipped out, they are allocated to distant public warehouses with due reference to ultimate distribution. Thus distributed at strategic centers, the surplus stock becomes truly spot stock for aiding the sales department and for immediate delivery in each market. This statement applies to threshing machines, radio sets or massage creams—to all merchandise alike.

Properly chosen commercial warehouses supply the deficiencies of factory storage. They are the main arteries of travel.

It has proved not always to be advisable to provide their own storage facilities for manufacturers whose product is such that it cannot be forced upon the market evenly throughout the year, or for manufacturers who are unable to diversify their product so as to operate their machinery without stoppages.

Certainly it is seldom wise to store all surplus output at the plant. To do so predicates investment in buildings, with their necessary maintenance. Such private storage houses, if erected, would be utilized for only a portion of the year. They would accordingly, in their turn, have a period of idleness, during

"Safeguarding Against Moral Risks"

THAT is the subject of Mr. Haring's next article, to appear in the July issue, for traffic and sales managers, touching upon their business with relation to public warehousing.

The new article has such sub-heads as "Theft of Goods from Stock," "Tampering with the Goods" and "Fires of Questionable Origin."

duplicate machinery is provided, the manufacturer learns that his workmen are not adaptable. They have learned to perform some one part, or go through some single operation, and much time is lost before they become equally proficient in performing the new operation. While the workman is learning the output fails to pass inspection, and loss is entailed.

It is usually found in making women's wear that workers skilled to make cloaks and suits can turn to shirts or shirt waists only after an additional apprenticeship. An Akron rubber factory laid off 2000 hands in a recent week in one department, while advertising for 450 in another; an Evansville furniture factory let go 80 cabinet makers, while it was offering ten hours' pay for nine hours' work for chair workers; a Connecticut concern closes its screw-making shop three months each year at the very time its gun-making shop runs overtime, but the owner has found that only 7 per cent of the screw-makers are employable as gun-makers.

Seasonal manufacturing, which once prevailed, has for many reasons ceased to profit the owner. It is disastrous to the workers. Rising costs, too, have brought a new angle to manufacturing. None seems able to cope with increases in the expense of selling and distribut-

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Public Warehousing and Economic Distribution

which time they would occasion useless expense.

Another purpose is accomplished in routing goods through commercial warehouses at distant points. It yields a protection to the factory's market in case of fire to the plant, shut-down due to labor trouble, etc.

If goods be stored solely at the plant, they are not available at the very time when most needed—the fire might destroy and the strike certainly would prevent shipment to customers. The same trouble that closes down the manufacturing departments grips also the men employed in the shipping and store house departments; the stored goods are nor more available for the market than if held in the form of raw materials.

In the public merchandise warehouse, in the end, manufacturers of the past decade have found an institution which supplies admirably their own deficiencies.

The public warehouse "takes up the slack," so to speak, for manufacturing.

As the goods are finished they are shipped. With wise allotment of such warehouses the goods are always available for market, not on the premises of the maker but in warehouses that stand nearer to the market than the factory itself.

Allocation is made with due relation to advertising effort, branch agencies, freight rates, and particularly with regard to likely transportation delays.

Possibly the importance of this service of public warehousing is emphasized by noting the volume of the business. Of the total storage space of all warehouses reported in the 1925 Annual Directory, published as part of the January issue of *Distribution & Warehousing*, an exact calculation indicates that approximately 60 per cent was designed for miscellaneous merchandise, the remaining 40 per cent being 27 per cent for household goods and 13 per cent for cold storage.

Such wide use of public warehouse space is emphatic proof of the real value of the service, especially when it is remembered what vast spaces are required for cold storage, for furniture, for custom house bonding, etc.

Creation of Wealth Encouraged

IT is evident, therefore, that the "distribution problem" of the manufacturer has come as a stabilizer of supply of manufactured goods. Its effectiveness is great in preventing irregularity of factory operation. Continuous running of the plant has its obvious bearing on the cost of the product. It enables the manufacturer, to some extent, to ignore fluctuations of demand. He takes for granted that there will be in the year's time enough demand for his goods that all will find a market. He then may give attention—if he follows

a commercial warehouse policy—unreservedly to manufacturing methods.

It has been usual to emphasize in warehousing discussions the concept of "surplus wealth" for stored goods. Nor is there any gainsaying that storage of surpluses of wealth has been, in a historic way, the occasion of the public warehouse.

With the increase of surplus wealth, as represented in things material, the needs of adequate storage have grown apace. In this manner the bank, the library, the university, even the church, have become depositories of the surpluses quite as much as the commercial warehouses.

In the present generation, however, a different aspect is cast on the economic services of storing. Without in the least detracting from the importance of preserving the accumulations of surplus wealth, public warehousing in the United States has appropriated unto itself a more aggressive service. It not only conserves what has been created of surplus: it actively asserts itself to create new wealth.

Deliberately the commercial warehouse is used to increase the quantity of goods.

In the realm of farm products the public warehouse (especially cold storage) induces man to grow what otherwise would not be grown; to harvest what otherwise would rot in field or orchard; to preserve what otherwise would be thrown away.

In the manufacturing world the public warehouse leads to the making of what otherwise would not be fabricated.

In this manner the commercial warehouse rises above being merely a passive reservoir where surplus is stored. It becomes a producer of wealth in the sense that it encourages others to produce what otherwise would not be created. Man is urged to grow and to manufacture what elsewhere would not be created until demand had waved high the banner of "wanted."

Water or Electric Power

MANUFACTURED articles are warehoused at times through another cause. Wherever water power is used it is found that this cheapest of all power is highly "seasonal." When the "dry months" come the power fails. This power runs low, moreover, in those months when rainfall is least (or evaporation and absorption greatest)—which are, as a rule, the summer months. If power be required throughout all the twelve months, hydro power must be supplemented by steam power. Wherever, as a consequence, water power is used, the manufacturing costs are less—often by wide margins—during the months when water is plentiful.

A similar class of manufacturers

are those which purchase electric power from the central stations. It is a feature of all such contracts that the consumer (the factory) undertakes to use each month a stipulated minimum kilowatt quantity. In default of use, payment must be made therefor just as though used, in the same manner that the householder pays his "minimum bill" for residence lighting under the "ready-to-serve" principle.

For such factories it is a distinct advantage to consume their allotted monthly quota of electric current. The payment for electricity not used during the period of factory idleness is a dead loss; when, later, overtime operation of the plant comes in order to meet the demand for goods, the additional power used above monthly quota must be paid for, it not of course being allowed to deduct what has previously been paid for current now used.

The use of water power has seen tremendous revival of late years, due to the perfection of the turbine engine and to other mechanical improvements that make profitable to harness waterfalls of as little as six or eight feet in rivers. Likewise, the extension of central power station service is advancing throughout the entire Appalachian region.

Those who use water power must operate to capacity "while water flows over (or through) the wheel." The water gage is the barometer of their factory calendar. Those who purchase electric power, on the other hand, rest under a financial obligation to run the plant regularly and evenly. Any deviation "jumps up the electric bill." With them, cost accounting adds the impetus of its red-inked figures—figures that reveal, so that none may mistake, the unprofitableness of plant idleness. This class of factories is on the increase, more rapidly in the Piedmont possibly than elsewhere, although in the Pittsburgh-Wheeling district the central power stations are fast displacing privately-owned plants. Their steel towers, with low sweep of high voltage wires, have demonstrated their superiority to the tall smoke stacks even in those States where coal is cheapest.

For both classes of factories, the public commercial warehouse is the outlet. It equalizes the burden and it stabilizes production, alike for the owner who must "run when the water flows" and for him who must operate "all the time or pay for the juice."

Both types of manufacturing are, beyond question, on the increase. It is to be expected that the public merchandise warehouse will increasingly perform for them its service of easing off the peak of production in excess of immediate demand by accumulating the goods at strategic marketing and rate-breaking points.



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WHEN WRITING ADVERTISERS MENTION DISTRIBUTION & WAREHOUSING

FROM THE LEGAL VIEWPOINT

By George F. Kaiser

Why Auction Sales at Night Are Illegal in New York State

I WAS recently asked by a New York warehouseman if it were not possible for him to auction off stored goods at night. The warehouseman decided to auction them at night instead of daytime as an experiment, thinking they would possibly bring a better price then.

I was obliged to advise him that it is unlawful by statute to conduct auction sales of goods at night in the city of New York.

Certain classes of goods are expressly excepted, including books, prints, horses and live stock; goods sold in the original package, as imported, according to a printed catalog, samples of which are exposed to public inspection at least one day prior to the sale; and paintings, statuary

and other works of art, which have been on public inspection at least one day preceding the sale.

This statute (Section 1991 of the Consolidation Act) has been held constitutional. The case in which this conclusion was reached is *Biddles, Inc., and Irving Brill vs. Richard E. Enright*, Jan. 21, 1925, recently decided by the New York Court of Appeals. The plaintiffs, one of whom is the owner of a jewelry store in New York City, and the other of whom is a duly licensed auctioneer of the city of New York, sought in this proceeding to secure an injunction restraining the defendant, as police commissioner, from enforcing the provisions of this statute.

THIS law, in substance, has been on the statute books of New York in one form or another more than 150 years. The first Act relating to auction sales was passed by the Colonial Assembly, March 8, 1773.

The Act of 1773 was preceded by a preamble which recited that "whereas a practice of selling goods by auction at night, when their qualities cannot be accurately distinguished, has obtained in the City of New York, whereby the unwary have been frequently imposed upon, and great frauds committed, for prevention whereof, be it enacted," etc.

The grounds on which the statute was held to be constitutional are set forth in the following paragraphs quoted from the Court's recent opinion:

"The appellants base their arguments upon this preamble. They say that in 1773 the only artificial light was the candle or oil lantern (they might have added the torch); that these were insufficient to enable purchasers to see clearly and distinctly what they were buying; and, further, that these artificial lights were very conducive to fire. Their argument continues: As we now have the electric light and sufficient fire protection in the City of New York these reasons no longer apply, and, therefore, the purpose of this statute has long since vanished.

"Counsel seems to think that the reason assigned for the original passage of this Act must be adhered to throughout the century, and that no other reasons or conditions, however good and sufficient to make it constitutional, will suffice, as they have not been stated by subsequent enactments. In other words, as the Colonial Assembly gave its reason

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for the passage of the original Act of 1773, all subsequent Acts of like nature must stand or fall according to the same reason based upon the same conditions.

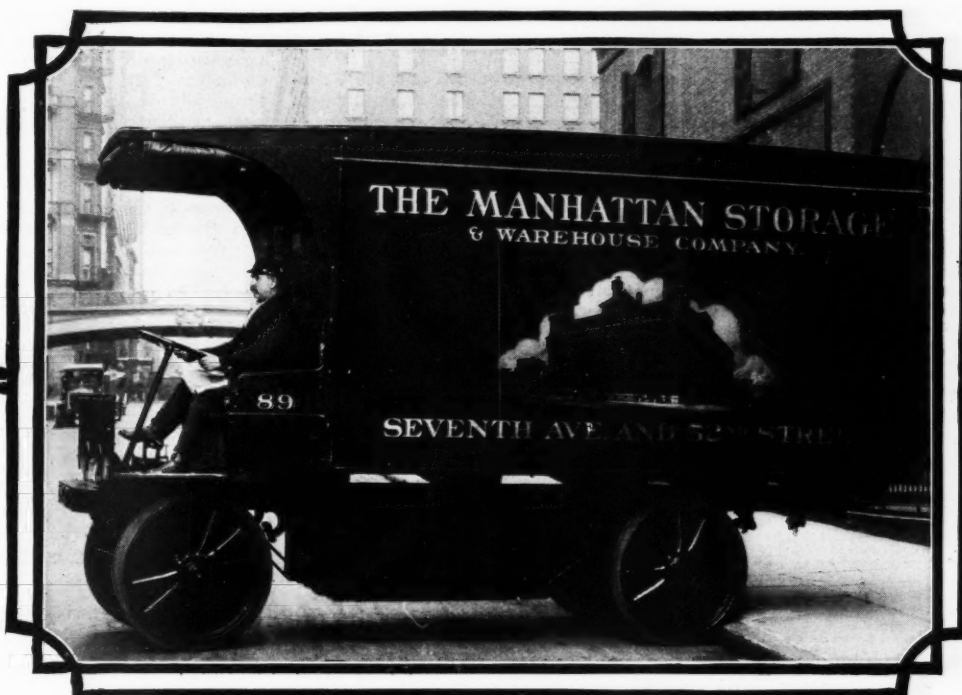
"This is too narrow a view to take of this legislation. Counsel has somewhat confused reasons and conditions. Physical conditions may change, but the new conditions may make such an Act all the more necessary for the protection of the public from fraud and hidden danger. New conditions may sustain the same reason or, to be more accurate, reasoning from new conditions and new premises may bring us to the same result.

"Courts should be very slow in declaring legislation which has been frequently reenacted during the course of a century unconstitutional, where conditions may exist which make such a statute reasonably necessary for the public welfare. As was said by this court in *People vs. Beakes Dairy Co.* (222 N. Y. 416, 426): 'To hold a statute unconstitutional is a grave thing to do. To refuse, by so doing, to recognize a demonstrated evil and to characterize

the unusual in legislation as impossible is unwise. Constitutional law is "to a certain extent, a progressive science."

"In the first place, to say that because the candle and the lamp light have been succeeded by the electric light, deception and fraud cannot be perpetrated, as customers may readily examine all articles by present-day artificial light, may not be true to fact. With the improvements in science and in manufacture imitation jewelry and precious stones are much more like the real article than ever before. To detect the imitation is now much more difficult. In the examination of jewelry and precious stones, silks, fabrics, and the like, too much artificial light, or the nature of the artificial light, may be as deceiving as the candle or the lamp. The glare may be as obscuring as the darkness. Colors, too, as we well know, may take on a different shade altogether, according to the quality or coloring of the light. Manipulations of the lights upon the stage have made it common knowledge that the eye may be readily mistaken as to the actual nature of the thing observed. Without any actual intent to defraud, purchasers may be deceived as to the nature and quality of the article they are buying where there is no opportunity to examine it by daylight. The many kinds of light now in use, together with the degree of brilliancy, may make it much easier for a purchaser to be deceived, than by the use of candle or lamp, where the dimness at least was to be anticipated.

"It is not enough to say that the business may be honestly conducted. The State may to some extent compel honesty by imposing a license fee if widespread



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can sell one truck.
It takes a good
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frauds upon and losses by its people are thereby prevented. Any trade, calling or occupation may be reasonably regulated if 'the general nature of the business is such that unless regulated many persons may be exposed to misfortunes against which the Legislature can properly protect them.' (*People vs. Beakes Dairy Co.*, supra, p. 427.)

"Another very good reason why the Legislature might be justified in passing such an Act is the prevention of the gathering of a crowd at night in or about the streets of New York where jewelry and precious articles are being sold. Surely we are having trouble enough in this day with thugs, robbers and hold-ups. No one who is familiar with our Court records, or the issues of the daily press, but is familiar with the fact that murders are too frequently committed for the sole purpose of robbery and theft, and that pedestrians are frequently waylaid in the streets of the

City of New York and their valuables taken. This condition has called for comment in many quarters, and is well known to every judge holding the Criminal Courts or reviewing criminal cases. The legislators might have had before them these facts.

"When we come, therefore, to consider this statute as it affects the plaintiffs' business of selling jewelry, we can see good reason why the Legislature in the interests of peace, safety and the protection of citizens should require that the scattering of valuables made at public auction, amidst a crowd of strangers, should be conducted in the daylight where the purchasers can retire and return to their homes or places of business with more safety than at night. Any legislation which tends to lessen the danger should be welcomed, not criticised.

"We cannot say, therefore, that the Act of the Legislature is so arbitrary,

such an unlawful interference with the business of the plaintiffs, as to be unconstitutional. It is a reasonable effort to insure fair public sales, to prevent fraud and deception and to protect purchasers from the dangers lurking in the darkness of the night. A statute may not accomplish the purpose for which it was intended. Reasonable minds may differ as to its necessity, but where from one side of the argument it appears to be reasonable and furnishes a fairly good opportunity to accomplish a public benefit or remove an evil, the Court should not interfere with its enforcement by declaring it unconstitutional. (*People vs. Weller*, 237 N. Y. 316-332.)"

The Court further justified the statute on the ground that "the business of an auctioneer, while perfectly legal, has always been affected with a public interest and subject to legislative restriction."

(Ill.) Law applicable to keeper of safety deposit vault, in case of loss of contents of box therein, is that relating to bailments.—*Chicago German Hod Carriers' and Benevolent Soc. v. Security Trust & Deposit Co.*, 146 N. E. 135. Key No. 45.

(Keeper of safety deposit vault is bound to use ordinary care to keep deposits safely.—*Id.*)

(Ill.) In action by renter of safety deposit box against keeper of vault for loss of contents, evidence as to amount of property in box held sufficient to go to jury.—*Chicago German Hod Carriers' and Benevolent Society v. Security Trust & Deposit Co.*, 146 N. E. 135. Key No. 47.

(In action by renter of safety deposit box against keeper of vault to recover for loss of contents of box through robbery, evidence of negligence held sufficient to go to jury.—*Id.*)

(Iowa) A bona fide purchaser of warehouse receipts is the one who takes it for value, as defined in Code Supp. 1913, § 3138a58 (Code 1924, § 9718), and without notice of any defect in the title of the vendor.—*General Motors Acceptance Corp. v. Baker Mfg. Co.*, 201 N. W. 774. Key No. 17.

(Ky.) Measure of damages to used household goods damaged in transportation is not their decreased market value, but is diminution of their reasonable value to owner, excluding sentimental or imaginary value.—*Davis v. Rhodes*, 266 S. W. 1091. Key No. 135.

RECENT legal cases of interest to warehousemen are digested herewith. A full printed report of any case may be obtained for twenty-five cents by addressing the editor of *Distribution & Warehousing* to cover publisher's costs. Key number should be specified.

(Ky.) Where amount fixed by shipper as damages for loss of use of household goods while being repaired was \$50, it was error to permit jury to allow as high as \$150 for this item, and verdict, being for lump sum, could not stand.—*Davis v. Rhodes*, 266 S. W. 1091. Key No. 137.

(Mass.) Assignment of non-negotiable warehouse receipts for wool and causes of action which assignor might have against warehouse man for breach of duty arising from storage thereof held sufficient to entitle assignee to prosecute action in name of commonwealth, under G. L. c. 231, § 5, for warehouseman's negligence; it not being essential that obligee of warehouseman's bond should execute assignment.—*Commonwealth v. Market Warehouse Co.*, 146 N. E. 29. Key No. 18.

(Mass.) When, at time of receipt of safety deposit box rented by executors in name of estate was given, attorneys for executors had been designated in writing on records of owners of vaults as person who could have access to safe, and renters thereof had knowledge of rule that no one but renter or his deputy could have access to it,

under contract he became renters' deputy, and owner could recognize him as person having lawful access to safe, and was not liable for according him access to the safe, notwithstanding he converted securities belonging to the estate.—*West v. State Street Exchange*, 146 N. E. 37. Key No. 45.

(N. J.) Under P. L. 1907, p. 344, § 9, subds. (a), (b), warehousemen, in possession of mortgaged goods covered by non-negotiable warehouse receipt issued to mortgagor, were justified in delivering goods to mortgagee, on mortgagee's demand, under provisions of mortgages entitling mortgagee to re-take goods on default.—*Travers v. Burdige*, 127 A. 191. Key No. 25 (8). (Failure to surrender warehouse receipt and to pay storage charges justified warehousemen's refusal to deliver goods.—*Id.*)

(Mo. App.) Where transfer company had no need for trucks in its business, it was not negligent in not providing trucks on which trunks awaiting delivery might have been placed, when its platform was flooded by unprecedented rainstorm.—*Ford v. Wabash Ry. Co.*, 266 S. W. 1032. Key No. 115.

(Mo. App.) On plaintiff's showing of delivery of goods to carrier in good condition and subsequent damage, burden is on carrier to show by clear, positive and unequivocal evidence that damage was caused by act of God, whereupon burden shifts to plaintiff to show defendant's negligence causing or contributing to damage.—*Ford v. Wabash Ry. Co.*, 266 S. W. 1032. Key No. 132.

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MILBAUER TO MANAGE PORT NEWARK TERMINAL

CHARLES MILBAUER, widely known in the public storage industry, has been selected as associate and general manager of the new Port Newark Terminal, Inc., formerly the United States Army Base at Newark, N. J. Effective June 1 the terminal company removes from its temporary offices at 1001 Broad Street, Newark, to the former Army Base property, which Frank Kenna took over recently under lease from the War Department.

The property which Mr. Milbauer will operate consists of nine warehouses, each 1161 feet long and 161 feet wide, built of terra cotta and concrete and having automatic sprinkler systems; two large sheds of the same dimensions; 4000 feet of dock, 1000 of which is cov-

Charles Milbauer



General manager of Port Newark Terminal, Inc.

ered; 14½ miles of railroad tracks and sidings; and numerous buildings for administration purposes.

The large buildings will be devoted to storage and to light manufacturing and the open yard space to storage of brick, lumber, etc.

Mr. Milbauer, organizer and first president of the Traffic Club of Newark and chairman of the storage and warehouse division of the Atlantic States Shippers' Advisory Board, has had long experience in work of the kind he is now doing. During the Spanish-American War he had charge of the Army's inter-island transportation service in the Philippines. His subsequent activities included positions as traffic manager of the Robinson-Roeders Co., Newark; freight solicitor and later general eastern manager of the Trans-Continental Freight Co.; and general manager of the Shupe Terminal Corp., Newark.

New Dayton Company

The Peerless Storage & Warehouse Co. has been organized at Dayton, Ohio,

headed by O. F. Schmidt, president of the Peerless Transportation Co. The company has leased a site at the northwest corner of Perry Street and the Baltimore & Ohio Railroad lines and plans to erect a warehouse containing approximately 15,000 square feet of floor space. The building will have a private siding and will be used for storage of both merchandise and household goods. The company has a capital stock of \$10,000. William Wirsching and H. A. Estabrook are associated with Mr. Schmidt in the enterprise.

Jamaica Company to Build

The Jamaica Storage Warehouse Co., Jamaica, Long Island, New York, is planning to build a five-story and basement building, with mezzanine floor, for household goods. It will contain cold storage space, a rug-cleaning department, trunk, silver and rug vaults and piano rooms. Moores & Dunford, Inc., are the architects.

YE ED.'S GOLFING OF INTEREST TO STORAGERS

(Concluded from page 39)

26 in. long so are you trying to insult us, Meisy?

Whether Meisy is trying to insult us or not, he writes us a distinct affront vs. the golfing ability of Dan Bray, the Kansas City storager, & G. Dintelmann, the St. Louis storager, & Ellis Leritz, the Kansas City storager, as follows:

"I played with Dan Bray in K. C. last week & concluded that Dan is a wonderful driver; he averages 225 yds. G. Dintelmann plays a fairway perfectly; never does he fumble a shot on the fairways. Ellis Leritz never misses a putt, no matter how long it is.

"Now this three would make 1 good golfer."

The 3d communication comes from Earl M. Medbery, the Providence, R. I., storager, & seems to question whether Ye Ed. knows anything about golfing anyhow. Earl says:

A Rhode Island Skeptic

"When the duties of editing *Two Bits* become too exacting & your shattered nerves need a rest why not come up to Providence & exercise Syd Green's mid-iron? I have a couple of clubs that I could never use* that might go with it. You know, you have written so much about golfing that I would like to see whether you know anything about it."

Meanwhile, what we require to complete our set of golfing utensils is 1 brassie, 1 spoon mashie, 1 mashie niblick, 1 putter, also 1 good jigger. A capable rock-remover would be acceptable also on a/c our aim is somewhat unsteady whenever the gallery is not gentlemanly.

*Well, Earl, why don't you mail them to Ye Ed. instead of talking so much about them? We will misuse them for you.

JACOBS SECRETARY OF MASSACHUSETTS ASSOC.

THE new secretary of the Massachusetts Warehousemen's Association, succeeding Anson M. Titus who recently resigned to enter the building construction business, is Olin M. Jacobs, well known as secretary of the New England Manufacturing Confectioners Association. He assumed the secretaryship of the storage organization on May 1 and the new offices of the association are now located at Rooms 1217-18, 40 Court St., Boston.

Mr. Jacobs comes well qualified to fill the position. He is a graduate of Wyoming College of Business, Kingston, Pa.; of Syracuse University, where he received a degree of Ph.B. in 1906; and of Harvard University, where he received a degree of A. M. in 1910.

Olin M. Jacobs



New secretary Massachusetts Warehousemen's Association

As secretary of the New England Manufacturing Confectioners' Association Mr. Jacobs is widely known not only to the confectionery trade here but also in other business spheres where his ability and painstaking efforts have counted. He was formerly sales manager for the Universal Optical Corp., Providence, R. I., and has had several years of wide experience in association work, both as secretary and as representative of member organizations.

Announcement:

OWING to the fact that an unusual volume of text is available for this annual Material Handling and Equipment issue of *Distribution & Warehousing*, a number of the regular departments, including "With the Associations," have been crowded out. The departments omitted will be resumed in the July number.

OTIS

MICRO-DRIVE (SELF-LEVELING)

FREIGHT ELEVATORS

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WAREHOUSES, RAILROAD and STEAMSHIP TERMINALS

THIS type of Elevator eliminates all "inching" at the floors, as the car automatically levels with the floor landing, and maintains that position, irrespective of stretch of ropes or changes in load on the platform. This automatic leveling feature speeds up elevator operation, reduces current consumption, increases the life of the apparatus, and saves operating expense. The exact landings facilitate loading and unloading of the elevator, prevent damage to freight and equipment due to trucks bumping against car platforms or floor landing when the elevator is not exactly level, as is almost invariably the case with ordinary elevator control, where the operators are unskilled or careless in making good landings.



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NEW YORK

EXPANSION PLANS OF NATIONAL TERMINALS

THE Ninth Street Terminal Warehouse Co., Cleveland, operated by the National Terminals Corp., with headquarters at Indianapolis, has been reorganized as the Interstate Terminal Warehouses, Inc.

The Interstate has purchased all the stock of the North Pier Dock & Warehouses, Chicago, from J. B. Livingston, who was president and owner of the North Pier company, and has purchased also all the stock of the Indiana Refrigerator Co., one of the Indianapolis properties operated by the National Terminals Corp. A new bond issue covers the retirement of the stock of the old Ninth Street Terminal Warehouse Co. of Cleveland and the purchase of the Indiana Refrigerating and North Pier properties, respectively, in Indianapolis and Chicago. In the case of the Cleveland project the same stockholders take their proportionate share of the new stock and no additional stock is to be sold.

The officers of the new Interstate Terminal Warehouses, Inc., are president, William J. Hogan, Indianapolis, who is president of the National Terminals Corp. and who was president of the old Ninth Street company of Cleveland; vice-president in charge of operation, A. B. Efroymson, who was general superintendent of the old Ninth Street company; vice-president and treasurer, Norman Metzgar, secretary and treasurer of the Indiana Terminal Warehouse Co., Indianapolis, and vice-president and secretary of the National Terminals Corp.; secretary, I. W. Sharp, who was secretary of the old Ninth Street company of Cleveland.

The operation of the Interstate in Cleveland, the Indiana Refrigerating in Indianapolis and the North Pier in Chicago will be by the National Terminals Corp., which has recently organized the Detroit Railway & Harbor Terminals Co., Detroit, which operates the Cincinnati Terminal Warehouse Co., Cincinnati, and the Michigan Terminal Warehouse Co., Detroit, in addition to the companies already mentioned.

In connection with taking over the North Pier Dock & Warehouses, Chicago, the National Terminals Corp. will establish there a general merchandise

division. Heretofore the North Pier property's space has been almost exclusively leased. The Chicago property comprises three plants, as follows:

Warehouses 1 to 17 inclusive, containing 1,345,000 square feet of floor space. These buildings have direct connection with the Chicago freight tunnel serving all railroads on less than carload shipments. They have a railroad siding for 120 cars and dock facilities of 1680 feet on a Chicago River slip. The docks are a regular port of call for the Goodrich Transit and Graham & Morton lines feeding Lake Michigan points, and the National Terminals Corp. is arranging with other boat lines, from Montreal to Duluth, to make the North Pier warehouses a regular port of call.

Warehouses 18 and 19, with capacity of 100,000 square feet of floor space and with Chicago River dock facilities.

Warehouses 20, 21 and 22 (on Chicago River slip opposite warehouses 1 to 17), with capacity of 150,000 square feet.

New Detroit Project

All of the North Pier warehouses have railroad sidings—Chicago & North Western from the West; and the Erie has a float service on cars arriving from the East on its lines, making delivery at warehouses on same morning of arrival in Chicago, thus eliminating 24-hour and 48-hour delays. This combination gives the North Pier project direct connection with railroad lines east and west.

In warehouses 1 to 17 inclusive the North Pier company will specialize in package merchandise warehousing. In warehouses 18 to 22 inclusive the company will specialize in straight carlot material and in storage-in-transit merchandise, including newspaper paper, sugar, stock feeds, cereals, etc.

In connection with the Detroit Railway & Harbor Terminals Co. the National Terminals Corp. is constructing a \$5,000,000 project which is expected to be completed by March 1, 1926. The warehouse will contain 250,000 square feet of cold storage space, 500,000 square feet of general merchandise space, and 20,000 square feet of public office space for local representatives of manufacturing interests. Albert Kahn is the architect, with Moores & Dunford, Inc., as consulting engineers.

NORFOLK WAREHOUSES LEASED BY H. C. MILLER

THE city of Norfolk, Va., is out of the terminal operation business, having found that business unprofitable because of conditions over which the city has no control, but with which private operations are not confronted.

The City Council has approved the bid of Harvey C. Miller, head of the Atlantic Tidewater Terminals Co. and of other large operations in Boston, Brooklyn, Philadelphia and elsewhere, for lease of the municipal piers and warehouses, for joint operation with the Army Supply Base, at Norfolk. Mr. Miller's bid for lease of the Army Base piers and warehouses from the Shipping Board has been approved.

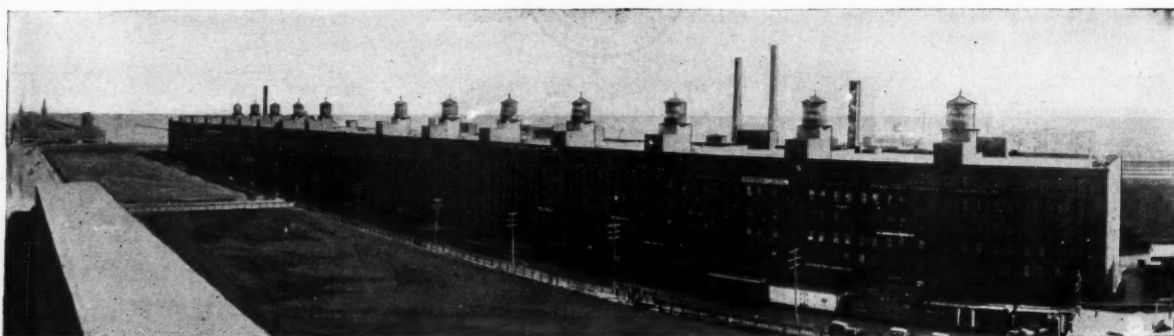
The Norfolk Warehouse Corporation bid for the lease of the Army Base guaranteeing an annual rental of \$42,250. The bid was rejected. Agreement was reached between the city of Norfolk, the Shipping Board and Mr. Miller for the latter to lease both properties for joint operation. When bids were received for the city lease, as required by law, the Norfolk Warehouse Corporation submitted a bid somewhat higher than that of Mr. Miller, and it was rejected.

Revenue Division

Under the terms of the lease to Mr. Miller 66 2/3 per cent of the net revenue from operating the terminals will go to the owners. It will be divided equally between the city and the Government. The Army Base piers and warehouses, allowing for the war-time expense of construction, are valued at the present market somewhere between \$10,000,000 and \$15,000,000. The city piers and warehouses, recently constructed, represent an investment of about \$3,000,000.

Negotiations with Mr. Miller for lease of the city piers were begun last September, and he finally agreed to take the piers over and form a corporation to operate them. He was expected to begin his operations about June 1.

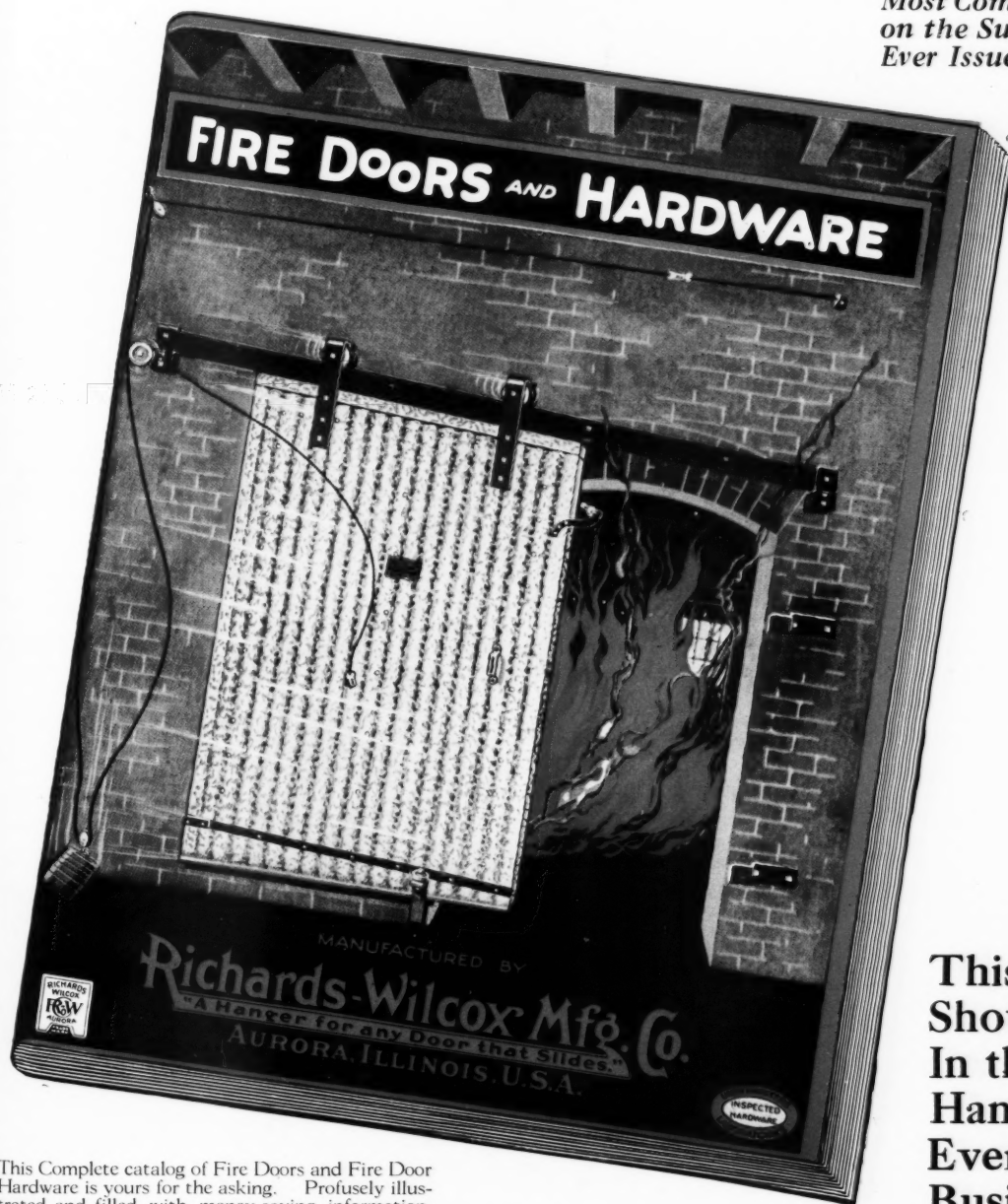
The city piers and warehouses, with a grain elevator now leased to the Grain Marketing Corporation, were built out of a \$5,000,000 bond issue in 1923. The city has been operating the Army Base as municipal terminals since 1918.



North Pier Dock and Warehouses, Chicago, taken over by National Terminals Corp.



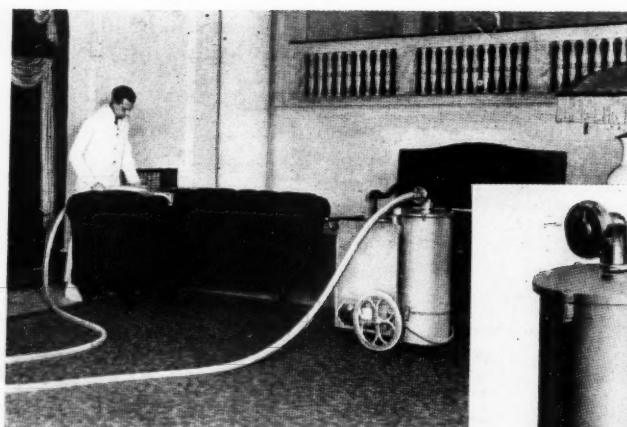
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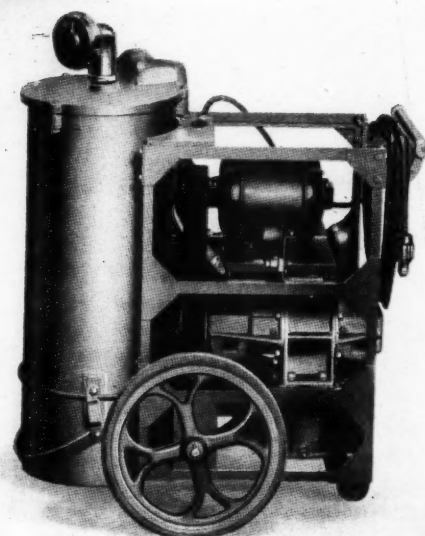
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<p>RICHARDS-WILCOX CANADIAN CO., LTD. Winnipeg LONDON, ONT. Montreal</p>		



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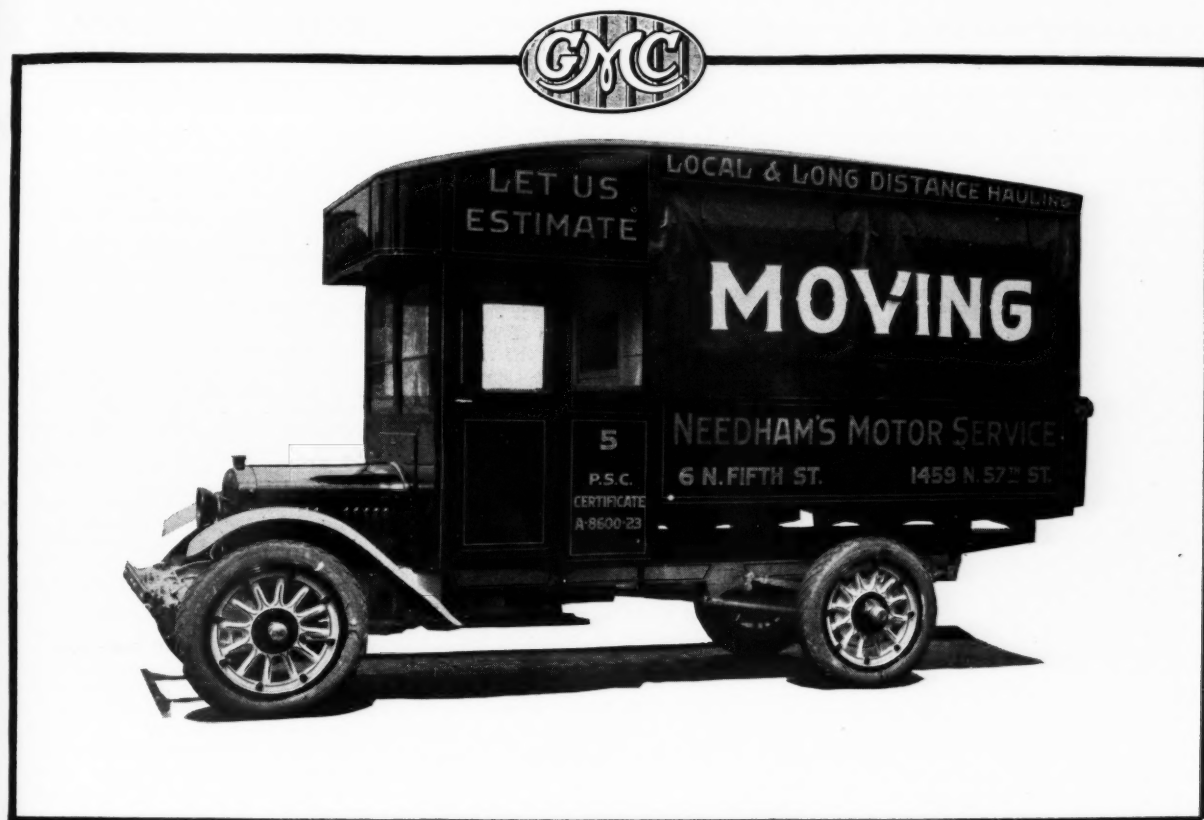
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WHEN WRITING ADVERTISERS MENTION DISTRIBUTION & WAREHOUSING

GOVERNMENT ISSUES A WAREHOUSE TREATISE

THE Department of Commerce has just released a bulletin on "The Merchandise Warehouse in Distribution" which offers a study of the services and best practices of the public warehouse industry. The report portrays the advantages, services and opportunities presented by commercial storage warehouses, correlating these services with their relations to transportation, warehouse and distribution costs, credit, and handling and storage rates.

Most of the important warehouse services are considered in this study, which is approached from the angles of better transportation in supplying public needs, reduction of loss and damage claims, lower transportation charges by carlot distribution from a central distributing point, advertising in conjunction with warehouse distribution, and warehouse costs.

Comprising 33 pages, this bulletin presents not only written material relative to the uses of the many services of warehouse distribution but contains also a number of tables on freight rates and a "Zero" basis of rates, determined by an actuarial survey, which allows any warehouseman to apply a factor for his basic revenue needs and have a complete scale easily available.

This bulletin is the first of a series which the Department of Commerce contemplates issuing on warehousing and distribution. A summary, based on some advance text made public by the Department of Commerce last year, appeared in the December, 1924, issue of *Distribution & Warehousing* under the title "The Merchandise Warehouse's Place in Present-Day Distribution," written by A. Lane Cricher, Special Agent, "Bureau of Foreign and Domestic Commerce" of the Department of Commerce.

The Contents

Mr. Cricher, who is connected with the Transportation Division of the department's Domestic Commerce Division, is the author of the document now completed, "The Merchandise Warehouse in Distribution." He divides the treatise into sections which include the following:

Freight Rates in Relation to Central Warehouse Distribution.

Services of the Merchandise Warehouse.

Storage of Seasonable Commodities.

Handling and Storage Rates.

Special Warehouse Facilities.

Warehouse Receipts.

Packing for Domestic Distribution.

Warehouse Services and Distribution Costs.

Numerous charts, graphs and freight rate tables illustrate the document, and some of the warehouse rate tables shown are the work of the Illinois Association of Warehousemen.

The Department of Commerce announces that copies of the pamphlet, which is No. 15 of its Trade Promotion series, may be obtained, at ten cents

apiece, from the Superintendent of Documents, Government Printing Office, Washington, D. C.

N. Y. Dock's 1924 Report

The annual report of the New York Dock Co., for the year 1924, shows a total revenue of \$3,370,909, as compared with \$3,297,713 in the previous year. After all expenses and reserves for depreciation and taxes, and crediting other income, the company reported net income of \$554,031 available for the capital stock, against net income of \$622,869 in 1923. After allowing for the regular dividend requirements on the company's preferred stock there was reported a balance equal to 77 cents a share earned on the \$7,000,000 common stock outstanding. In 1923, the company reported a balance equal to \$1.75.

The statement for the month of March shows gross revenue of \$272,057, against \$273,407 last year, and net income of \$47,253, against \$51,326. For the first quarter of 1925 the company reports gross revenue of \$815,580, against \$791,697, and net income of \$135,744, against \$131,711.

Charles M. Smith Dies

The funeral of Charles M. Smith, who was superintendent of the Boston Terminal Refrigerating Co., East Boston, took place on May 10 from his late home in Winthrop. O. C. Mackay, operating executive of the company, headed a large delegation of officials and employees at the services.

Mr. Smith was sick about a week with stomach trouble and died on May 7 as a result of a heart attack. He has been superintendent for the past twelve years, coming to Boston from the West, where he had previously been connected with the warehouse industry. He was 62 years old and was a Mason. He is survived by a widow.

George Taylor, Malden, for many years head shipper for the Boston company, has been appointed to fill the vacant position of superintendent.

Frank L. Ripley Dies

Frank L. Ripley, vice-president, director and member of the executive committee of the Quincy Market Cold Storage & Warehouse Co. and a director of the Boston Terminal Refrigerating Co., Boston, died on May 9. He was prominent in Boston's banking and marketing world. He was 72 years old.

Frederick Tillier Dies

Frederick Tillier, manager and operating executive of the Mariners' Harbor Warehouse Corp., Staten Island, New York City, died at his Brooklyn home on April 22. He was formerly for twenty-five years with the Erie Railroad, during which period he had charge of the Long Dock Terminal in Jersey City and the Jay Street Terminal in Brooklyn. He is survived by two sons.

CORRECTIONS IN APRIL ARTICLE BY MR. HARING

IN the April issue of *Distribution & Warehousing*, page 21, was given a tabulation to show the license regulations of the States for merchandise warehouses. Thanks to interested warehousemen, errors in that tabulation have been called to the attention of the author, H. A. Haring.

Under Massachusetts it was stated that licenses are "Optional." They are, as a matter of fact, "Compulsory." The Massachusetts statutes read (Laws of 1921, Vol. 1., Chap. 105, p. 997):

"Sec. 1. The Governor . . . may license suitable persons or corporations . . . to be public warehousemen. . . . They shall give bond to the State treasurer . . . in an amount and with sureties approved by the Governor.

"Sec. 2. Whoever keeps and maintains a public warehouse for the storage of goods . . . without procuring a license and giving bond . . . shall be punished by a fine of not more than one thousand dollars, and may be enjoined . . . from maintaining such a public warehouse . . ."

Under Pennsylvania it was stated that licenses are "Compulsory, as a tax for general revenue purposes." The statutes of the State, however, would seem to make this licensing the privilege of cities of the third class, not of the State itself, the wording being (Art. V., Sec. 4191, p. 385, of the codified statutes of 1920):

"Cities of the third class shall have power: To levy and collect a license tax for general revenue purposes, not exceeding one hundred dollars each, annually, on all . . . warehouses or storage houses . . . and the taxes assessed under this clause shall be in addition to all other taxes levied . . ."

For the first of these corrections thanks are owing to David C. Buck, president, Eastern Storage Co., Chelsea, Mass.; for the second error, to three Pennsylvanians, Robert L. Spencer, Pittsburgh, warehouse superintendent, Pennsylvania Railroad System; B. G. Miller, president, Miller North Broad Storage Co., Philadelphia, and Charles G. Wightman, Philadelphia, secretary, Pennsylvania Furniture Warehousemen's Association.

Crutcher in Wall Street

Announcement is made by J. M. Noyes & Co., 66 Broadway, New York, members of the New York Stock Exchange, that L. C. Crutcher has been made an associate member of the Noyes organization. Mr. Crutcher was formerly head of the old L. T. Crutcher Warehouse Co., Kansas City, and was later vice-president of the General Storage Co., Cleveland. At one time he was a director of the American Warehousemen's Association and the public storage industry's representative in the Domestic Distribution group of the Chamber of Commerce of the United States.

Complete Service in Warehouse Construction

The Initial Cost of Your Warehouse or the Initial Cost of Contemplated Changes in Your Present Warehouse Determines, to a Large Extent, Whether That Project Will Be Profitable.

The initial cost should be known at the start.

A competent engineer who has had experience in the design and operation of many warehouses should prepare a budget for the project and make a survey of the earnings. When this budget is financed it should not be exceeded.

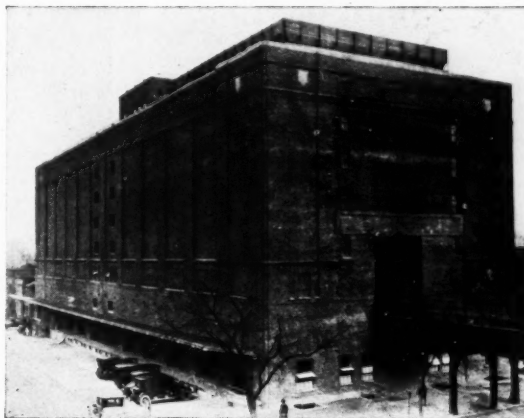
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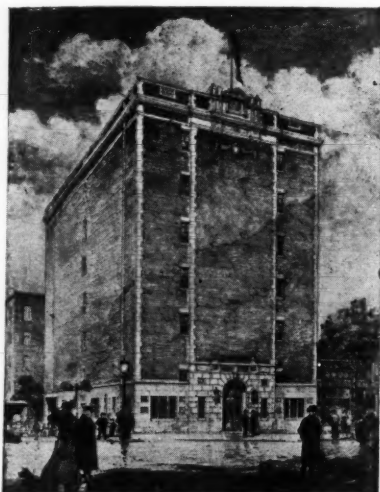
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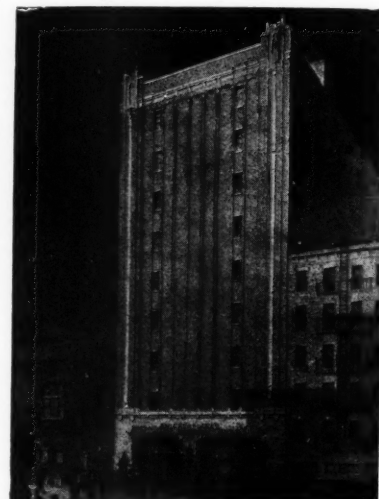
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Means Greatest Available
Storage Space*



A loss you can't recover!

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- The first essential of a Warehouse is maximum storage space. Any curtailment of this space due to improper design cuts off revenue that cannot be secured in any other way. It is therefore of first importance that your plans be right in the beginning. **Corrections cannot be made after the building is up and ready for business.**

Not only have we specialized for years in the designing, planning and construction of Warehouses which insures the use of every available foot of storage space in the building we construct for you—but we are in a position to build for less money on account of our close contact with

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As Warehouse Cost Specialists, a name earned through service performed for a great number of Warehouse Owners throughout the Industry, we offer the prospective owner or builder an Engineering Service comparable to none other in our specific line.

We charge no fee for consultation and advice. Let us help you get the **most** for your money. Our staff is at your disposal. Write, wire, telephone or call upon us.

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WHEN WRITING ADVERTISERS MENTION DISTRIBUTION & WAREHOUSING

Shippers' Index

A Guide to representative Merchandise, Cold Storage and Household Goods Warehouses, Forwarders, Terminals, and Transfer Companies, arranged by States and Towns

"ANDY SAYS"

When the Associated Advertising Clubs of the World recently met in Houston, Tex., Secretary of Commerce Hoover told them that "advertising is an integral part of the foundations of civilization."



In those few words, our esteemed Secretary said a mouthful and none should benefit more by them than this great industry of warehousing.

In the words of the New York Tribune, it is advertising, or publicity, that gets things done, or sometimes undone. It deposes political parties and popularizes a new kind of collar. It starts wars and sets the girls rolling their stockings.

Back of any growth of public sentiment is some kind of publicity—paid space, word of mouth, propaganda or newsprint; frequently the whole lot.

We frequently refer to the Warehousing Industry as being a "Billion Dollar Industry." We have every reason to believe this is true. But there is no industry of such size and importance on earth that spends less to advertise itself than does the warehouse industry and that should not be so.

Warehouses individually and the industry as a whole must be properly advertised to keep their places in the rapidly changing cycle of industrial relations. When the story of the warehouse is known as it should be, irresponsible gyps will dis-



appear and the responsible warehouseman will replace the privately owned warehouse.

Big business is the direct result of big ideas—and the biggest idea of them all is advertising. Warehousing needs more advertising than it has had in years past and it is up to the warehouseman himself to do it. It may hurt but in the end it pays.



In this connection the "Shippers' Index" section of *Distribution & Warehousing* which comprises sixty-five pages of which this page is the first, represents the market place for shippers who do business with warehouses. Every warehouseman worthy of the name should be advertised there. We all prefer to do business with a firm that tells who it is, where it is and what service it has to offer. It reflects the kind of confidence that inspires doing business with you.

"ANDY"

CONVENTION CALENDAR

(Annual or Semi-Annual Meetings)

July 8-12.....	National Furniture Warehousemen's Association....	Mackinac Island, Mich.
September	Connecticut Warehousemen's Association.....	(To be decided)
October	Missouri Warehousemen's Association.....	(To be decided)
December	American Warehousemen's Association.....	(To be decided)
December	Illinois Association of Warehousemen.....	Chicago
January, 1926	Canadian Warehousemen's Association.....	(To be decided)
January, 1926	New Jersey Furniture Warehousemen's Association.....	Newark
January, 1926	New Jersey Merchandise Warehousemen's Association.....	(To be decided)
January, 1926	New York Furniture Warehousemen's Association.....	New York City
February, 1926	Maryland Furniture Warehousemen's Association.....	Baltimore
February, 1926	Pacific Coast Furniture Warehousemen's Association.....	(To be decided)
February, 1926	Pennsylvania Furniture Warehousemen's Association.....	Philadelphia
February, 1926	Pennsylvania State Warehousemen's Association.....	(To be decided)

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MODERN FIREPROOF WAREHOUSE
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Bonded. Sprinkler System. Low Insurance.

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TUCSON, ARIZONA

Tucson Warehouse & Transfer Co.

POOL CAR DISTRIBUTORS
FIREPROOF STORAGE

26 North Scott St. Tucson, Arizona

FORT SMITH, ARK.

**O.K. TRANSFER & STORAGE CO.**

Rogers Ave. and 2nd St.
FORT SMITH, ARK.

Storing—Shipping—Moving
Pool-Car Distributing a Specialty



LITTLE ROCK, ARK.

Gazette Transfer & Storage Co.

212-214 Scott St.

Distribution of merchandise and household goods pool cars—City and interurban delivery—transfer of household goods—storage of agricultural implements. Crating and packing. A fleet of motor trucks and a well organized business guarantees you an exceptionally efficient service.

LITTLE ROCK, ARK.

Terminal Warehouse Co.
**Storage—Drayage—
Distribution**

85,000 Sq. Ft. Warehouse Space

Fireproof Sprinklered

Free Switching from All
Railroads

TEXARKANA, ARK.

DISTRIBUTION

1882

TEXARKANA

Complete Service

HUNTER

TRANSFER CO.

ARK-TEX.

STORAGE

BERKELEY, CAL.

DRIVER

STORAGE CO.

Formerly

STUDENTS

TRANSFER & STORAGE CO.

Distributors of Pool Cars
Fireproof Depositories

SHATTUCK AVE. AT WARD ST.

EL CENTRO, CAL.
IMPERIAL VALLEY

PIONEER TRUCK and TRANSFER CO.



Warehouse:
S. E. Cor. 3rd & State Sts.
Office: 114 N. 5th St.

Only Reinforced
Concrete Warehouse
for Storage and
Carload Distributing
Throughout
the Whole Imperial
Valley.

Daily Truck Service
to All Valley Towns.
Our Stock in Trade,
SERVICE.

FRESNO, CAL.

BEKINS

VAN & STORAGE CO.

California
Shipments Promptly
Handled

Los Angeles
1335 S. Figueroa
Street

Fresno
1248 Van Ness Ave.

—Distributors of pool
car shipments.
—Private spur.
—12 fireproof deposi-
tories in California.

San Francisco
13th and Mission

Oakland
22nd and San Pablo

FRESNO, CAL.

Located in the Center of Fresno

State Center Warehouse & Cold Storage Co.

"Fireproof"

Private siding Santa Fe

Distributors of Pool Cars Lowest insurance rate
Household Goods, Merchandise Fresno has terminal rates
Members American Chain of Warehouse and California Warehouse Assn.
747 R STREET, FRESNO, CALIFORNIA

FRESNO, CAL.

Valley Van & Storage Co., Inc.

Private Spur

Distributors of Pool Cars of
Household Goods, Machinery and Merchandise
Office: 842 Broadway, Fresno, Calif.

HOLLYWOOD, CAL.

LOCATED IN THE CENTER OF
RESIDENTIAL LOS ANGELES

Hollywood Storage Company, Inc.

"FIREPROOF"

Car Distribution

Private siding P. E. RR.

We have Los Angeles terminal rates

Consign to Hollywood via U. P., S. P. or A. T. & S. F. RR.
1666 N. Highland Ave., Hollywood, Calif.

LONG BEACH, CAL.

BOYS TRANSFER AND STORAGE CO.

(Specializing in Household Goods)

Moving Packing Storage Shipping

Send us your next shipment; Large or Small. You can be assured of Fair
Treatment for your customer. Remittances Promptly made, SAME DAY. And
proper protection of your interests at this end—No Passing the Buck.

(DEPENDABLE SERVICE)

Office 428 Locust Ave.

Affiliations

LONG BEACH, CAL.

Since
1903

Harry Meldrim, Pres.



HOUSEHOLD GOODS MERCHANDISE

Removals, Packing, Forwarding, Distributing

4 Warehouses Warehouse Spur—U. P.
100,000 sq. ft. STORAGE Sou. Pac. & Pac. Elec.

MEMBERS: { California Warehouseman's Assn.
Pacific Coast Furniture Warehouseman's Assn.
National Furniture Warehouseman's Assn.

San Pedro—DOCK CONNECTIONS—Wilmington
SAFETY SERVICE

LOS ANGELES, CAL.

BEKINS

VAN & STORAGE CO.

California
Shipments Promptly
Handled

Los Angeles
1335 S. Figueroa
Street

Fresno
1248 Van Ness Ave.

—Distributors of pool
car shipments.
—Private spur.
—12 fireproof deposi-
tories in California.

San Francisco
13th and Mission

Oakland
22nd and San Pablo

LOS ANGELES, CAL.



CALIFORNIA TRUCK CO.

INCORPORATED 1884

Pool Carload Distributors

Handling goods destined to points in
SOUTHERN CALIFORNIA and ARIZONA
and to
TRANS-PACIFIC PORTS
P. O. BOX 570, ARCADE STATION

LOS ANGELES, CAL.



Co-operation

Consign to L. A. Warehouse—the largest fireproof repository for household goods on the Pacific Coast. We co-operate to the utmost and treat your customers as we do our own.

Los Angeles Warehouse Co.
316 Commercial St. Los Angeles

LOS ANGELES, CAL.

Located in the Center of Downtown Business District

COLYEAR'S
VAN & STORAGE CO.

Curtis C. Colyear, Prop.

MAIN OFFICE—415 S. San Pedro St.

Warehouse No. 2
415 S. San Pedro St. Fireproof.

Warehouse No. 4
540 S. Alameda St. Sprinkler Equipped.

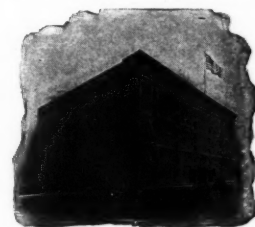
Member { American Warehousemen's Association
Nat'l Furn. Warehousemen's Association
Pacific Coast Warehousemen's Association
Los Angeles Warehousemen's Association

Moving—Packing—Storing—Shipping
Pool Car Distribution—Household Goods—Merchandise
Twenty-Two Years of Dependable Service

LOS ANGELES, CAL.

Consign to
LYON

Two modern Fireproof Warehouses in residential districts — private spur tracks. Prompt service and collections.



Lyon Fireproof Storage Co.
1950 SO. VERMONT AVE. LOS ANGELES

LOS ANGELES, CAL.

Fidelity Fireproof Storage

Packing, Moving, Shipping of household goods, distribution of pool cars to and from everywhere.

WASHINGTON & ARAPAHOE ST.

LOS ANGELES, CAL.

LOCATED IN THE CENTER OF RESIDENTIAL LOS ANGELES.

Hollywood Storage Company, Inc.

"FIREPROOF"

Car Distribution Private siding P. E. RR.

We have Los Angeles terminal rates

Consign to Hollywood via U. P., S. P. or A. T. & S. F. RR.
1666 N. Highland Ave. Hollywood, Calif.

LOS ANGELES, CAL.

MARK DESTINATION

The Heart of The Best Residential District

HOLLYWOOD

and Save

Los Angeles
7 MI. HAUL



PREMIER

FIREPROOF STORAGE CO.
6372 SANTA MONICA BOULEVARD
HOLLYWOOD CALIF.

LOS ANGELES, CAL.

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Storage and Distribution

4 acres of floor space, sprinkler equipped, served by S. P. spur tracks and prepared to give complete warehouse service. Our location, experience, warehouse facilities, and local standing, all make it worth your while to consider this warehouse for the storage and distribution of your merchandise.

JENNINGS-NIBLEY

Warehouse Co.

1101 East 5th Street, Los Angeles, Cal.

LOS ANGELES, CAL.

WE SOLICIT YOUR
SHIPMENTS AND POOL CAR
DISTRIBUTION

PRUDENTIAL
STORAGE AND MOVING CO.

LOS ANGELES

OFFICE
941 W. 16th St.

SAN DIEGO

OFFICE
962 Second St.

THREE WAREHOUSES—PRIVATE R.R. SIDINGS

Members Pacific Coast Furniture Warehousemen's Association
National Furniture Warehousemen's Association

LOS ANGELES, CAL.

**RICHARDS
TRUCKING & WAREHOUSE
COMPANY**

 668 SO. ALAMEDA ST.
LOS ANGELES, CALIF.

Agents:

Baldwin Universal Co.

We solicit your commercial storage and pool car distribution, as we are located on free trackage, and operate both City and Interurban Motor Truck Service, in most of the territory surrounding Los Angeles. We are authorized franchise carriers under the Railroad Commission.

Route "VIA RICHARDS"

SPECIAL STEAMSHIP CONNECTION FROM WILMINGTON & SAN PEDRO HARBOR TO LOS ANGELES



LOS ANGELES, CAL.

 The most Up-to-date Service for
Los Angeles' most exclusive
Residential Section.

 Complete
Facilities

 for
Freight Forwarding
and Distributing
of
HOUSEHOLD
POSSESSIONS

Members:

 National Furniture Ware-
housemen Assn.
Pacific Coast Furniture
Warehousemen Assn.
American Warehousemen
Association.


116 SO. WESTERN AVE.

LOS ANGELES, CAL.

**SERVICE DRAYAGE
and
WAREHOUSE CO.**
ALL THAT THE NAME IMPLIES

Distribution, Warehousing

1319-21 Palmetto St. Los Angeles

OAKLAND, CAL.

**BEKINS
VAN & STORAGE CO.**

 California
Shipments Promptly
Handled

 Los Angeles
1335 S. Figueroa
Street

 Fresno
1248 Van Ness Ave.

—Distributors of pool car shipments.

—Private spur.

—12 fireproof deposi-
tories in California.
 San Francisco
13th and Mission

 Oakland
22nd and San Pablo

LOS ANGELES, CAL.

1,500,000 Square Feet of

 Modern Fireproof Warehouse Space in Los Angeles and at the
Port of Los Angeles.
Free and U. S. Customs Bonded Storage
Insurance Rate 18 cents.

Storage—Forwarding—Distribution—Cartage

 Space Leased for Private Warehouse, Office and Display Desk.
Space with Desk and Office Service Rented.
Cotton Pressed to High Density.

 Special equipment for the proper handling of various commodities.
Steamer Space booked when requested.

 We can serve you in some capacity and would suggest that
you complete your file by requesting the rates for our specialized
service.

 UNION TERMINAL WAREHOUSE COMPANY
UNION TERMINAL WAREHOUSE CORPORATION
SHATTUCK & NIMMO WAREHOUSE COMPANY
LOS ANGELES, CALIFORNIA

OAKLAND, CAL.

 NO TASK TOO GREAT
LAWRENCE
WAREHOUSE COMPANY
NO DETAIL TOO SMALL


AL. T. GIBSON, Pres.

ONTARIO, CAL.

**Natural Distribution Center
for San Bernardino and Surrounding Counties**

 Railroad Siding and Storage Yard. 560 feet of Private
Track

Carload Distribution

 Fireproof Storage. 16,000 sq. ft. of inside
storage space. 22,000 sq. ft. of outside stor-
age space. First-class Auto Truck Service.
Connections with all towns. A real service
located in the heart of Southern California.

HICKEY WAREHOUSE CO.

541 E. Main St.

Ontario, California

LOS ANGELES, CAL.

"When Shipping West, Ship Westland"

WESTLAND WAREHOUSES, located in heart of Central Manufacturing District, on tracks of Los Angeles Junction Railway (a neutral belt line road connecting with all main lines at through rates), offer you complete warehouse service in modern fireproof structures at reasonable rates. Lowest insurance rates in city. Office and display desk space for lease.

**Westland Distribution & Storage
Warehouse Co.**

Central Manufacturing District

Los Angeles

The Men Who Distribute

Tidewater Oil

 Read DISTRIBUTION & WAREHOUSING
and consult the Shippers' Index

SAN DIEGO, CAL.

McCLINTOCK Storage Warehouse Co.

Kettner at B St.

Successors to
Prudential Storage & Moving Co.

OFFERING A MOST
EFFICIENT - ECONOMICAL
AND COMPLETE SERVICE

INCLUDING

RECEIVING - STORING
PACKING - MOVING
SHIPPING & DISTRIBUTING

OF BOTH

HOUSEHOLD GOODS
and
MERCHANDISE

SAN FRANCISCO, CAL.

BEKINS VAN & STORAGE CO.

Los Angeles
1335 S. Figueroa
Street

Fresno
1248 Van Ness Ave.

California
Shipments Promptly
Handled

—Distributors of pool
car shipments.

—Private spur.

—12 fireproof deposi-
tories in California.

San Francisco
13th and Mission

Oakland
22nd and San Pablo

SAN FRANCISCO, CAL.

THE HASLETT WAREHOUSE CO.

60 CALIFORNIA ST., SAN FRANCISCO
Pioneer in the Warehouse and Distribution Business
Operating in the Logical Distribution Center of the Pacific Slope with
Complete Warehouse and Drayage Facilities
Low Insurance Rates

S. M. HASLETT, President P. E. HASLETT, Secretary
Member American Warehousemen's Ass'n.
Member American Chain of Warehouses.

The Men Who Distribute

Mellin's Food

Read DISTRIBUTION & WAREHOUSING
and consult the Shippers' Index

SAN FRANCISCO, CAL.

LAWRENCE WAREHOUSE COMPANY



AL T. GIBSON, Pres.

SAN FRANCISCO, CAL.



Storing and Dis-
tributing Mer-
chandise Our
Specialty

Let us handle your
San Francisco ship-
ments.

We supply the necessary services for the
handling of merchandise through a
modern warehouse.

San Francisco Warehouse Co.
625 Third Street



SAN FRANCISCO, CAL.

SERVICE



Office and Main Warehouse
2701 SIXTEENTH STREET, SAN FRANCISCO, CAL.

Cable Address
"SOUTHER"

Codes
All Standard

Private Terminal on So. Pac. Tracks
Exclusive Facilities for Handling Automobiles, Trucks,
Tractors, Etc.

In 1924 we handled 17,000 motor vehicles

SOUTHER WAREHOUSE COMPANY

BOXING FOR EXPORT SHIPMENT

All details handled, bills of lading, clearance, etc.
We are Specialists in this business.

MAY WE SERVE YOU?

SANTA MONICA, CAL.

STORING—MOVING—PACKING—SHIPPING

SECURITY VAN & STORAGE CO.

M. ZERBONI

Inc.

M. W. ZERBONI

New Fireproof Storage

SANTA MONICA, 1417 Second St. LOS ANGELES, 509 Molino St.

DENVER, COLO.

A. H. AMICK

E. W. PITCHER


Amick Transfer & Storage Co.
 1029 Santa Fe Drive, Denver, Colo.
FIREPROOF WAREHOUSE

 Pool cars distributed.
 Local and interurban truck
 service.
 Low insurance rates.

 Household Goods
 Complete packing service.
 Reciprocity at every opportunity.
 Open or private storage.

DENVER, COLO.

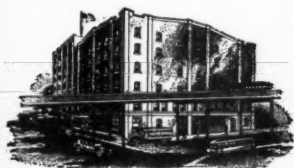
The Johnson Storage and Moving Company, Inc.
 221 BROADWAY

MODERN FIREPROOF WAREHOUSE
 DENVER, COLORADO

 Member { C. T. & S. A.
 N. F. W. A.

Household Pool Car Distributors

DENVER, COLO.


WAREHOUSE
 Your Stocks With Us

150,000 Sq. Ft. Space

DENVER

Serves Two Million Population

 Send Pool Cars in our care for distribution.
 42 teams and trucks insure prompt service
 to customers and satisfaction to you..

The Kennicott-Patterson Transfer Co.
 1700 Sixteenth St. DENVER, COLORADO

DENVER, COLO.

F. C. Bartle, President

**The Merchants Storage &
Transfer Co., Inc.**
Drayage and Storage Distribution

 OFFICE
 1556 Wazee Street
 Telephone Main 6667

 WAREHOUSES
 1536 Wynkoop St.
 Telephone Main 1632

Sprinkler System Warehouse

Free Switching from All Railroads

Centrally Located in Shipping District

Storage of Merchandise and Household Goods

 Household Goods Shipped to All Points
 at Reduced Rates

Distribution of Pool Cars Our Specialty

Member

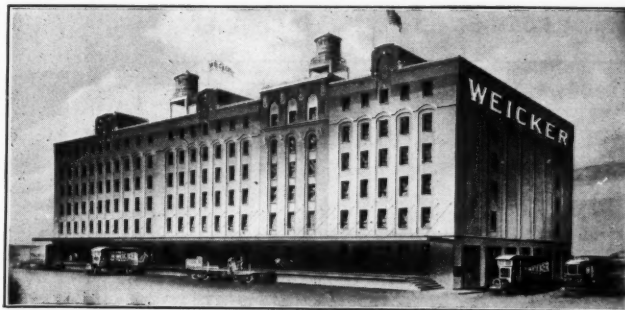
 Central Warehousemen's Club
 Colorado Transfer Companies Association
 American Warehousemen's Association
 Denver Transfer Companies Association
 National Furniture Warehousemen's Association
 Correspondence Solicited

DENVER, COLO.

**When You Need
SERVICE
in Denver and
vicinity**
*we are the distribution and
warehousing specialists who
can serve you best.*

Our vast experience as receivers, forwarders and distributors has fitted us to handle your every requirement in the most satisfactory way.

Our spacious warehouses located within a short haul of all local freight depots, the wholesale and retail district, and connected by track with every railroad entering Denver, is at your disposal—comprehensive service and full protection at extremely low rates.



We are thoroughly equipped to distribute General Merchandise, Heavy Machinery, Household Goods.

Write our traffic expert for full information on all your shipping problems in this territory. He will be glad to help you—we will be glad to serve you.


THE WEICKER TRANSFER & STORAGE COMPANY

 1700 Fifteenth Street
 Denver Colorado


PUEBLO, COLO.

Send Your Goods Where They Will Be Bought!

The residents of Pueblo proper have two million dollars a month to spend. Thirty million a year besides are spent in Pueblo by the residents of the surrounding two hundred mile circle.

Put your goods into our house in Pueblo, where the quickest and cheapest movement to any part of this prompt-paying market is secured.

You could not ask for better service than we will give you. You will find no other region of the country more responsive to cultivation. Put a stock into Pueblo and prosper.

S A G E

Transfer & Storage Co.

HARTFORD, CONN.

Established 1850

Incorporated 1908

The Bill Brothers Company

Transfer and Storage

190 Ann Street, Hartford, Conn.

Superior Facilities for the Moving of Machinery, Safes, Furniture, Pianos, Etc. Household Effects of Every Description Properly Packed for Storage or Shipment

STORAGE WAREHOUSES

With Separate Apartments for Household Goods and Private Railroad Siding for Carload Shipments

TRINIDAD, COLO.

The Place to Get Service

POPLE

TRANSFER & STORAGE CO.

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THE BRIDGEPORT STORAGE WAREHOUSE CO.

No. 10 Whiting Street

Merchandise and Household Goods
Warehousing and Distribution
Private siding—Free switching
Low Insurance—Prompt Service

GREENWICH, CONN.

HENRY G. DRINKWATER'S SONS, Inc.

Storage Warehouses

PACKING—CRATING—SHIPPING OF
HOUSEHOLD GOODS

Members of the National Furniture Warehousemen's Assoc.

HARTFORD, CONN.

Tel. Connection Office: 335 Trumbull St.
Safety Vaults for Silverware

GEORGE E. DEWEY & CO.

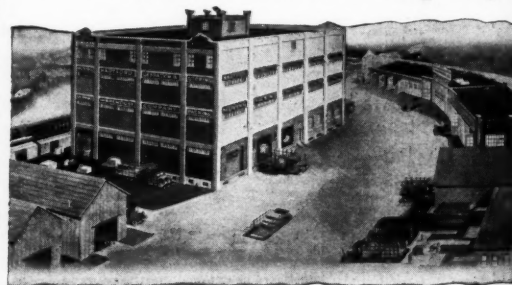
JOSEPH M. PELCHAT, Proprietor

Local and Long Distance Furniture and Piano Moving
Packing, Crating and Shipping of Pianos, Furniture, China
Only Fireproof Storage Warehouse in Hartford

Members { National Furniture Warehousemen's Association
Connecticut Warehousemen's Association
Canadian Warehousemen's Association

HARTFORD, CONN.

Hartford Despatch & Warehouse Company



FIREPROOF WAREHOUSE

THE ONLY FIREPROOF WAREHOUSE in this vicinity for storage of furniture and merchandise with PRIVATE RAILROAD SIDING. We offer the LOWEST INSURANCE RATES in and about HARTFORD, a building especially designed for warehouse purposes with PRIVATE ROOMS for the storage of FURNITURE and PIANOS. Open storage for MERCHANDISE and AUTOMOBILES. SHED and YARD ROOM facilities with WATCHMAN SERVICE, a TRUCKING SYSTEM which combines PROMPT LOCAL DELIVERIES with an OVERNIGHT SERVICE via RAIL and MOTOR TRUCK to all the principal TOWNS and CITIES within a FIFTY MILE radius.

MEMBERS OF

National Furniture Warehousemen's Association
Connecticut Warehousemen's Association
American Warehousemen's Association
American Chain of Warehouses

Conn. Representatives: Big Four Transfer Co.

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GARDNER STORAGE CO.

18 BLACKHALL STREET
PIANO AND FURNITURE PACKER, MOVER
AND SHIPPER

Safe Mover—Freight and Baggage Transfer—STORAGE

Members: Conn. Warehousemen's Assn.

Nat. Furniture Warehousemen's Assn.

WATERBURY, CONN.

The Ralph N. Blakeslee Company

Est. 1859

Storage { Furniture Trucking { Local and
 { Merchandise { Long Distance

Large Padded VANS for Furniture Moving

Members: N. F. W. A., Conn. W. A.

WATERBURY, CONN.

Waterbury Storage Company

John Moriarty, Inc., Prop.

Est. 1877

127 East Main St.

Elevators Fireproof Buildings Cap. 562 Rooms

MEMBERS: N. F. W. A.

Connecticut Warehousemen's Ass'n

WASHINGTON, D. C.

Modern
Fireproof
Building

LONG
DISTANCE
MOVING

PACKING
STORING
SHIPPING

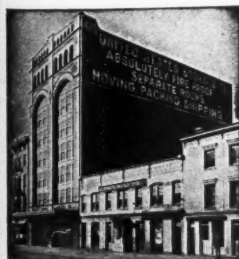


SMITH'S TRANSFER & STORAGE CO., INC.
1313 You Street, N. W.

WASHINGTON, D. C.

UNITED STATES STORAGE CO.

418-420 TENTH STREET, N. W.



MEMBERS:

National Furniture
Warehousemen's Association

Efficient and Courteous
Service

Modern Fireproof Warehouse

We are prompt in all things.

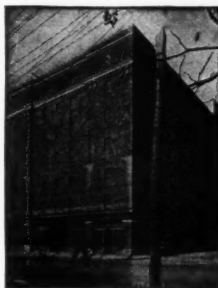
Member:
American Warehousemen's Assn.

* Distributors of Pool Cars

The Men Who Distribute
Cook's Linoleum

Read DISTRIBUTION & WAREHOUSING
and consult the Shippers' Index

JACKSONVILLE, FLA.



Member National Furniture
Warehousemen's Association

Delcher Bros. Storage Co.

459-61-63-65 Riverside Avenue

FIREPROOF WAREHOUSE

Low Insurance Rate

We Move, Pack, Store and Ship
Household Goods

Distributing Pool-Car a
Specialty

FLORIDA'S LARGEST

Shippers of Automobiles
for Tourists

JACKSONVILLE, FLA.

**UNION TERMINAL
WAREHOUSE COMPANY**

EAST UNION and IONIA STREETS

55 Rental Compartments Track Capacity 52 Cars

Building of reinforced concrete with sprinkler system. Low
Insurance Rate. Sub-Post Office and branch Western Union
Telegraph. Joint Railroad Agent. L.C.L. freight loaded
direct for line of road.

GENERAL MERCHANDISE STORAGE
AND FORWARDING

Special attention to handling of pool cars.

MIAMI, FLA.

**The John E. Withers Transfer &
Storage Co., Inc.**

will give your shipments careful attention. Fireproof Ware-
house. Facilities for distribution of pool cars. Moving, pack-
ing, shipping and storing Household Goods and Automobiles.

Private Trackage

Motor Equipment

1000-12 N. E. First Ave., Miami, Fla.

ORLANDO, FLORIDA

Orlando Bonded Warehouse (Inc.)

Post Office Drawer No. 1672

100-112 West Amelia Avenue

Storage and Distributing of General Merchandise,
Machinery, Household Goods

Private Siding, A.C.L.R.R.

Member National Furniture Warehousemen's Association

Sprinkler Protection

Low Insurance

It's a pleasure to serve you

PENSACOLA, FLA.

Ferriss Warehouse & Storage Co.

HARRY P. FERRISS, PRES.

Receiving and Warehousing of General Merchandise in car-
loads or less than carloads.

Merchandise stocks carried and records kept for out-of-town
concerns.

Cor. Chase & Alcinéz Streets

TAMPA, FLORIDA

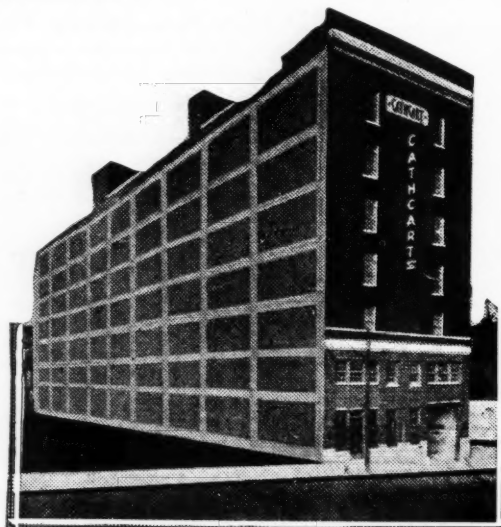
JOBBERS WAREHOUSING COMPANY

Storage, Distribution, Forwarding
Hauling and Stevedoring

31,000 Sq. Ft. Floor Space
Private R. R. Sidings and Docks, Deep Water

"Anything from Parcel Post to Steamship Cargoes"

ATLANTA, GA.



CATHCART VAN AND STORAGE CO.

HOUSEHOLD GOODS EXCLUSIVELY

THE MOST **MODERN WAREHOUSE** IN THE SOUTH

MEMBERS N. F. W. A.

ATLANTA, GA.



**MERCHANDISE ONLY
STORAGE
DISTRIBUTION**

Member American Warehousemen's Association

Security Warehouse Co.

Atlanta, Ga.

ATLANTA, GA.

CAMP TRANSFER & STORAGE, Inc.

16 Central Ave.

Storage, Packing, Shipping of Household Goods
Pool Car Distribution of Merchandise

Members of N. F. W. A.

AUGUSTA, GA.

L. C. DOOLITTLE, Gen. Mgr.

Augusta Bonded Public Warehouse Co.

Complete Warehouse Service in Storage and Distributing Merchandise.
Logical Point for Georgia Pool Car Shipments.

DIRECT RAILROAD SIDING. ALL RAILROADS.
REFERENCES: ANY BANK OUR CITY.

AUGUSTA, GA.

**THE HOLLINGSWORTH WAREHOUSES
MERCHANDISE WAREHOUSING AND
DISTRIBUTING POOL CARS A SPECIALTY**

Warehouse Not as Large as the Largest.
But Our Service as Good as the Best.

SAVANNAH, GA.

**Savannah Bonded
Warehouse and Transfer Co.**

General Storage—Re-Consigning
Distributing—Forwarding
Prompt and Efficient Service
Exceptional Facilities
Custom House Brokers

Track Connections with all Railroads and Steamship Docks
Members: American Chain of Warehouses
Members: American Warehousemen's Association

R. B. YOUNG, President
Bay Street Extension and Canal
P. O. Box 985 Savannah, Ga.

BOISE, IDAHO

PEASLEY

TRANSFER & STORAGE COMPANY

STORAGE, TRANSFER AND FORWARDING

419 SO. EIGHTH STREET

BLOOMINGTON, ILL.

F. G. BRUNTON

C. E. BRUNTON

R. N. BRUNTON

**BRUNTON
TRANSFER & STORAGE CO.**

Since 1905

Piano and Furniture Moving,
Packing, Forwarding and General Cartage.
Long Distance Moving a Specialty

Reduced Rates on Household Goods and Automobiles to all Parts of the West and British North-West.

415 N. Center St.

Phone 813

BLOOMINGTON, ILL.



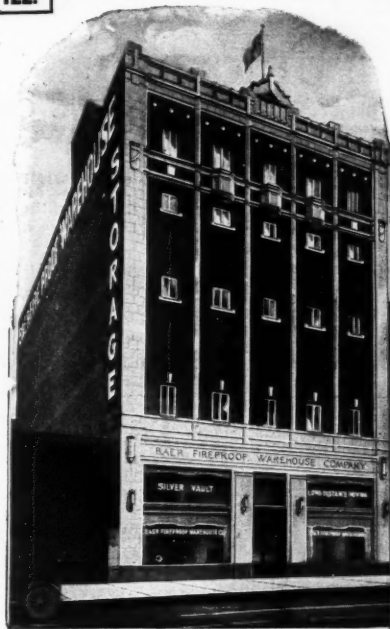
The Whole Corn Belt Is At Our Door

Free Switching connects our loading platform with five trunk lines. That means that no matter where your factory may be, you can ship to us by carload with the minimum amount of switching, time and freight. It also means that reshipments we make for you go by the most direct route in the shortest possible time, with the least amount of handling or transferring. Practically every point in the Middle West can be reached direct from our door by L. C. L. shipment. This is a big factor in successful pool-car distribution, and one that should incline you in our favor as the distributors, when you decide to take advantage of the many benefits of that method.

JOHNSON TRANSFER CO.

Bloomington, Illinois

CHICAGO, ILL.



Established 1892

BAER FIREPROOF WAREHOUSE CO.

POOL CAR DISTRIBUTORS
Of Furniture and Pianos
Collections Promptly Remitted

Members—The Chicago Association of Commerce—Nat'l Furniture Warehousemen's Assoc.—Illinois F. W. Association—Furniture and Piano Movers Assoc.
General Office—1927 Milwaukee Avenue, Chicago, Illinois

CHAMPAIGN, ILL.
URBANA, ILL.

WAGNER & SON

TRANSFER—PACKING—STORAGE

Packers and Shippers for the TWIN CITIES

Logan & Water Sts. Champaign, Ill.

CHICAGO, ILL.

BEKINS

Household Shipping
Company



Reduced Rates on Household Goods, Automobiles
and Machinery

General Offices, 905 BEDFORD BLDG., Chicago

NEW YORK, BOSTON, BUFFALO, CINCINNATI

The Men Who Distribute

Rexall Products

Read DISTRIBUTION & WAREHOUSING
and consult the Shippers' Index

CHICAGO, ILL.

We Have Moved

Into Larger, Modern Quarters
for Your Better Service



To handle the ever increasing business cleared through us, it has been necessary to move into much larger and more modern quarters, for efficiency.

Our new warehouse is on the Rock Island Railroad. There is a 10-car spot. Usual pool car distribution. Our own fleet of trucks as before. And lower insurance rates due to the fire-proof construction of the building.

Our New Address

Continental Warehouse Company

2213-35 So. LaSalle St.

Chicago, Ill.

CHICAGO, ILL.

CENTRAL STORAGE & FORWARDING CO.

2001 West Pershing Road

Operating
CHICAGO'S FINEST MERCHANDISE WAREHOUSES

On the great Chicago Junction Railway—In the world-famous Central Manufacturing District—The geographical center of Chicago.

No Switching Charges—No Cartage—No Delays.
650,000 square feet of fireproof space. Insurance rate 7½¢No Trap-Cars Here
L. C. L. Freight Loaded Direct to Destination

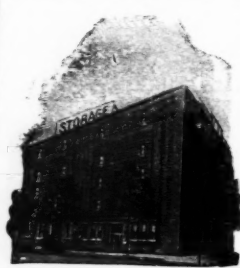
WHY NOT USE THE BEST FACILITIES?

CHICAGO, ILL.

EMPIRE STORAGE COMPANY

Fireproof
Warehouses
For Household Goods
(Established 1891)Carloads billed to our house track on
Illinois Central Railroad at Fifty-first
Street can be unloaded direct to our
warehouse floor.

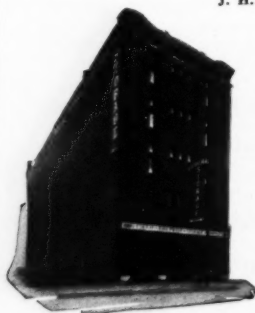
Low distribution rate on pool cars.

"Ship the
Empire Way"EMPIRE STORAGE
COMPANY
52ND ST. AND COTTAGE
GROVE AVE.MEMBER
National Furniture Warehouseman's Assn.
Illinois

CHICAGO, ILL.

J. H. MEYER, Pres. A. W. MEYER, V. Pres.
ED. WEBER, Secy.

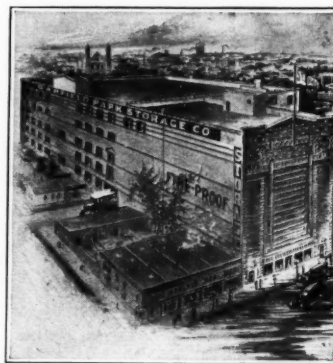
Federal Fire Proof Storage Company

Closest Storage Warehouse to
the LoopRemovals, Packing,
ShippingMain Office and Warehouse (A)
1230-1232 N. Clark Street
Warehouse (B)
871-873 N. State Street
ALL PHONES DIVERSEY 0600

CHICAGO, ILL.

G. A. Foster, Pres. L. N. Foster, Vice-Pres. H. B. Foster, Secy. & Treas.

CENTER OF THE GREAT WEST SIDE Garfield Park Storage Company

3111-17 W. Madison Street
(Two Blocks East of Garfield Park)Prompt and effi-
cient service for
West Side Ship-
ments. Collec-
tions promptly
remitted.All Warehouses
equipped with
Automatic Bur-
glar and Fire
Alarms.

Capacity 1000 van loads.

Consign Carload Shipments from Stations on C. & N. W.,
or C. M. & St. P. Rys. as follows:C. & N. W. Ry.: to California Avenue Team Track
C. M. & St. P. Ry.: to Western Avenue Team TrackCarload lots from Stations on other lines should be consigned care
Baltimore & Ohio, Chicago Terminal Transfer Railway, Kedzie Ave.
and Taylor St. Team Track.

MEMBERS OF N. F. W. A. and I. F. W. A.

CHICAGO, ILL.

HARDER'S

Fireproof Storage & Van Co.

Largest System of Fireproof Storage Warehouses in the
United States

HOUSEHOLD GOODS

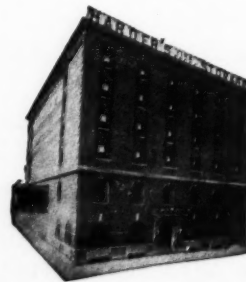
This large group of modern storage plants, each located with a view
to rapid and efficient handling of household goods and merchandise,
should be on your list if you insist upon service.We are expert handlers of household goods. In every branch of
packing, moving, storage and shipping we excel. Safety deposit and
silver vaults. Pool car distribution and city delivery service.

We remit promptly upon receipt of B/L

MERCHANDISE

Our merchandise storage and distribution facilities include private
switches and sidings. Free switching. No haulage charges. Our
shippers are always satisfied in their transactions with us.

Pool Car Distributors

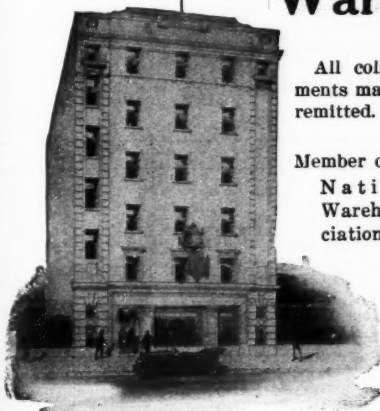
Members N. F. W. A., A. W. A.,
Ill. W. A.OAKLAND Street and Calumet Ave.
KENWOOD 4714-16 Cottage Grove Ave.
WOODLAWN 1117-19 East 63rd St.
ENGLISWOOD 6154-56 Wentworth Ave.
STONY ISLAND 6824-26 Stony Island Ave.
BROADWAY 4015-17 BroadwayHarder's Fireproof
Storage & Van Co.General Offices
40th St. and Calumet Ave.
Chicago

CHICAGO, ILL.

ESTABLISHED 1874

HEBARD

Storage Warehouses



All collections on shipments made to us promptly remitted.

Member of

National Furniture Warehousemen's Association, Illinois, New York and Southern Warehousemen's Association.

Our Seventh Warehouse

on 6331-33 Broadway, near Devon Avenue, which will handle all Rogers Park or North Shore shipments.

Warehouses A-B-C-D, West Side, Ogden and Winchester Aves. Warehouses E-F, North Side, Sheridan Road and Sheffield Ave. Warehouse G, North Side, Broadway near Devon Ave.

CHICAGO, ILL.

Free Switching

Crane Service

Storage for MACHINERY Exclusively

Machinery Warehouse Co.

74th and Ashland Ave.

Chicago

CHICAGO, ILL.

We Help You Keep Your Delivery Promises

The facilities we place at your disposal for the quick and careful distribution of goods in this territory are so well organized that your delivery promises are always kept—which means more clients and more profits.

Our B & O C T Warehouse has private switch track connecting with all Trunk Lines entering Chicago.

We specialize in—

Pool Car Distribution.
City and Suburban Delivery.

Merchants Warehouse and Distributing
Company
Chicago, Ill.

CHICAGO, ILL.

"NO DELAYS"

Edward Lasham Co.

Merchandise Storage

Pool Car Distributors

Teaming and City Delivery

Seventy-Five Motor Trucks and Wagons

Downtown Modern Warehouse

Switch Track Connections with All Roads

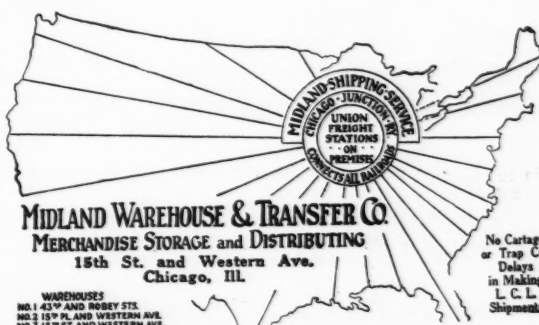
Served directly by Illinois Central, Michigan Central, Chicago & Northwestern and Chicago, Burlington & Quincy.

EDWARD LASHAM CO.

1559 S. State St.
Chicago
Illinois



CHICAGO, ILL.



WAREHOUSES
NO. 1 437 AND ROBEY STS.
NO. 2 157 PL. AND WESTERN AVE.
NO. 3 157 ST. AND WESTERN AVE.

No Cartage
or Trap Car
Delays
in Making
L. C. L.
Shipments.

CHICAGO, ILL.

North Pier Terminal Co.

See our advertisement on front inside cover page

The Men Who Distribute

Ford Roofing

Read DISTRIBUTION & WAREHOUSING
and consult the Shippers' Index

CHICAGO, ILL.

MERCHANDISE STORAGE FROSTPROOF

Very Low
Insurance RatesCM&STP Ry. Track
Inside Buildings

The Ontario Warehouse Co.

Ontario & Kingsbury Sts., Chicago, Ill.

Our location is specially convenient for the warehousing and distribution of merchandise. Private track facilities, with free switching from all railroads entering Chicago.

CHICAGO, ILL.

Soo Terminal Warehouse

519 W. Roosevelt Road

Chicago, Illinois

*Merchandise Storage and Distribution
Pool Cars Efficiently Handled*

We will deliver via the Chicago tunnel to any trunk line, freight house floor, excepting the Pierre Marquette Railroad, your shipments destined for points beyond Chicago; also we will make shipments for you over the Aurora & Elgin electric line and its connections, which gives over-night service. All without cartage charges.

"THE ECONOMICAL WAY"

CHICAGO, ILL.

Railway Terminal & Warehouse Company

444 W. Grand Ave.

Merchandise Storage

Located in the heart of the wholesale district. Especially convenient for the warehousing of spot stocks for distribution among the wholesale grocers.

Side track facilities with free switching from all railroads entering Chicago.

Modern Building—Low Insurance Rates

Use Our Service

Tunnel Service—Cut your cartage in half

CHICAGO, ILL.

SOUTH SIDE STORAGE FOR SOUTH SIDE DISTRIBUTION

In Chicago, the city of immense distances, it is necessary to use more than one central warehouse. We do not aim to cover all Chicago, but we do aim to cover the South Side better than it can be covered by any other medium, and what we aim to give and what we do give is **Service**, prompt, efficient and reliable.

Direct Connection with All Roads

SOUTH SIDE SHIPPING & STORAGE WAREHOUSE

131-135 West 63rd Street

Phone Normal 6266

CHICAGO, ILL.



Write or
ire
ESTERN

When you
ant a
AREHOUSE

AT

CHICAGO



SAVE TIME, MONEY and WORRY

in reaching your Western customers by using the up-to-date storage and traffic facilities of the *Largest Public Warehousing Unit West of the Atlantic Seaboard.*

HALF A MILLION square feet of the best floor space in Downtown Chicago devoted exclusively to the "open" storage of Quality merchandise. Insurance, 18.9c per \$100 per annum.

"At the Edge of the Loop," close to Chicago trade.

STOCKS CARRIED for local and out-of-town concerns. Storage-in-transit. Prompt rail reshipments anywhere, without cartage. Pool cars broken. Automobile storage and reshipment a specialty. Negotiable Receipts issued.

Write us now; we know how.

WESTERN WAREHOUSING COMPANY

MERCHANDISE WAREHOUSES

POLK STREET TERMINAL, PENNSYLVANIA SYSTEM

329 West Polk Street

CHICAGO

WILSON V. LITTLE, Superintendent



CHICAGO, ILL.

Have Your Own Transfer Representative In Chicago

IF you desire to make store door delivery in Chicago, you should use our facilities. If you will load your shipments for Chicago and points beyond so as to make a carload, we will distribute and re-ship the consignments. Send us parcels and packages in any quantity for delivery and re-shipment by freight, express or parcel post for Chicago and beyond.

We team freight to connecting lines for loading in through cars the same day unloaded.

Our representatives are at depots and docks.

Your agents and your customers save time and annoyance, if shipments are sent in our care.

Ask any railroad freight man about us.

Members of the Credit Men's Association.

Authorized Railroad Freight Transfer Agents.

**Jos. Stockton
Transfer Co.**
1020 So. Canal St.
Chicago, Ill.

DANVILLE, ILL.

Beeler Transfer & Storage

Merchandise Pool Car Distribution.
Furniture Storing, Packing & Shipping.
Auto Truck Service. Long
Distance Hauling. City and Inter-
urban Delivery.

208-210 West Main St.

DANVILLE, ILL.

Danville Transfer & Storage Co.

C. B. Hall, Pres.

G. W. Orr, Secy. & Treas.

The only fireproof warehouse in Danville.

Storage for household goods and Merchandise Distributing. Conveniently located in the heart of the wholesale district. Private siding to warehouse, and free switching from all railroads.

Low Insurance Rate

Danville is the breaking point of Eastern and Western Classification of freight rates, making a most convenient point for the distributing or storage of carloads.

American Warehouse Association.
Members National Furniture Warehousemen's Association.
Members Illinois Furniture Warehousemen's Association.



DECATUR, ILL.

SINCE 1892

Hamman Bros. Transfer & Storage Co.

Decatur's pool car distributors. Private switch to the ONLY FIRE-PROOF WAREHOUSE in the city. Truck and team service.

Members N. F. W. A.—I. F. W. A.—I. W. A.—C. W. A. I.

Office:—Williams St. at Broadway

DECATUR, ILL.

Ship to Meridith for Prompt Service in Decatur and Environs

Distributors of Household Goods and Merchandise. Located within 3 blocks of all freight depots. No terminal delay or switch charge when consigned direct to Meridith.

Household Goods and Merchandise Storage. Private Locked Rooms. Steam Heated Piano Rooms. Vans—Trucks—Drays. Ship your next car for results to

F. M. MERIDITH

Storage and Transfer Co.

320-350 E. Cerro Gordo

Decatur, Ill.

DECATUR, ILL.

DECATUR

Before you decide on your Illinois distribution investigate our facilities, service and low rates to Illinois points—

PARKE WAREHOUSES
Decatur, Illinois

STORAGE AND DISTRIBUTION

ELGIN, ILL.

Consign To Us To Reach The Fox River Valley

We are located at the entrance to one of the most prosperous agricultural and dairy sections in the country—convenient to nearly a hundred good sized towns.

By interurban and rail connections we handle promptly cars of merchandise and household goods consigned to us. Several modern plants for storage are available.

Consign to us. We know how.

ELGIN STORAGE & TRANSFER CO., 60-62 River Street, Elgin, Ill.

MOLINE, ILL.

Fireproof Warehouse

Freight Distributors for Moline, Rock Island,
East Moline and Silvis, Ill., Davenport, Iowa
and Upper Mississippi Valley

Send your freight to us at Moline for distribu-
tion as we are in the center of the group of cities
here and the haul will be shorter. We have our
own private track at the warehouse and our own
team track. Forwarding and reconsigning.

Crandall Transfer & Warehouse Company
1205-1209 Fourth Ave. Moline, Illinois

ROCKFORD, ILL.



"The Choice of the Greatest Industries"

PEORIA, ILL.

Office: 4-1285, 4-4238

TELEPHONES

Barns: 4-3307

O'Neill Bros. Transfer & Storage Co.**Merchandise Hauling**

Carload Shipments Distributed

Freight Handled Promptly

Pool Car Distributing

Merchandise and Furniture Storage

Commercial Furniture Warehousing

617-619-621 S. Water St. Peoria, Ill.

ROCK ISLAND, ILL.

Rock Island Transfer & Storage Co.
Merchandise Warehousing and Distribution

Motor Truck Service

C. B. & Q. SIDING

FREE SWITCHING FROM ALL OTHER ROADS

SPRINGFIELD, ILL.

Merchants Transfer & Storage Co.
BONDED WAREHOUSE

STORAGE, PACKING, MOVING AND SHIPPING.
HANDLING MERCHANDISE CARS A SPECIALTY
HEAVY AND LONG DISTANCE HAULING
1000 EAST MONROE STREET
SPRINGFIELD, ILL.

ROCKFORD, ILL.

Carry Spot Stocks at Rockford—and at The Bartlett Warehouse

Rockford (pop. 85,000) is a prosperous and
rapidly growing industrial city, the largest
city and chief distributing point in a wide
territory. Steam and electric lines and
concrete highways lead to all important
towns in Northern Illinois and Southern
Wisconsin.

The Bartlett Warehouse is new, of fire-
proof construction, and centrally located.
The downtown district and all freight sta-
tions are within four blocks.

Bartlett Storage Warehouse
Rockford, Illinois

SPRINGFIELD, ILL.

Moving Household Goods
Long Distance Hauling—None Better

CHAS. UNDERFANGER

PROPRIETOR

WEST END STORAGE

TELEPHONE MAIN 601

SPRINGFIELD, ILL.

Warehouse: 916 West Washington Street
Residence: 107 South State Street

EVANSVILLE, IND.

Central Warehouse Co.

INCORPORATED

F. W. GRIESE, Pres. and Mgr.

**PUBLIC STORAGE
AND WAREHOUSE**

901 Main St.

Evansville, Ind.

Mdse. Only
Storage & Distribution
Illinois Central Tracks.
Free Switching.

FORT WAYNE, IND.

Fort Wayne Storage Company
FORT WAYNE, INDIANA
*General Merchandise
 Storage and Forwarding*

FORT WAYNE, IND.

PETTIT'S STORAGE WAREHOUSE CO.
"FIREPROOF" BUILDINGS
STORAGE, TRANSFER, DISTRIBUTION

Located in Center of Business District
 We have our own truck line and are equipped to make prompt deliveries
 Private siding



FORT WAYNE, IND.

Southside Storage & Van Co.

Furniture Packing, Crating, Storage, Overland Moving
 and General Trucking

327 E. Superior St. Fort Wayne, Ind.

INDIANAPOLIS, IND.

"Coburn Service for Efficiency"

**Henry Coburn Storage
 & Warehouse Co.**

Indianapolis

Merchandise Storage

Quick Shipments

Distribution Cars

Orders filled and en route the day received.

No trap car delays.

We own and operate our truck equipment.



INDIANAPOLIS, IND.

D. & D. TRANSFER & STORAGE CO.
Indiana Licensed Class A Warehouse
 221-25 W. South Street.

Modern, Concrete, Vacuum Sprinkled, Steam Heated Building for the
 Storage and Distribution of Merchandise.
 Private R. R. Siding—Free Switching.
 Over 21 Years Continuously Serving
 Local and National Firms

INDIANAPOLIS, IND.

**Indiana Terminal Ware-
 house Co.**

See our advertisement on front inside cover page

INDIANAPOLIS, IND.

MANUFACTURERS!!!

We Need Twenty More Satisfied Customers

We can BEAT THEM ALL when it comes to PROMPT SHIPMENTS from STOCK. If you want INDIANA business, you need stocks here to compete with Indianapolis Manufacturers and OTHERS. Write us YOUR needs.

INDIANAPOLIS WAREHOUSE CO.

330 West New York St.
 (18 years' experience)

FRANK A. TODD, V. P. & G. Mngr.

INDIANAPOLIS, IND.

Shank Fireproof Storage Co.

Indianapolis, Ind.

We have added a new Fireproof Warehouse for Household Goods, 60,000 sq. ft. of floor space, at 1430 N. Illinois St. This new building is in addition to our other storage house at 227-229 North Jersey St. Every facility for the prompt and efficient handling of your shipments.

PACKING
 STORAGE

MOVING
 FORWARDING

Members of N. F. W. A.

THE SUBSCRIPTION PRICE OF

Distribution & Warehousing

IS

\$2.00 A YEAR

The Warehouseman who does not find ideas and suggestions in any one issue which will make or save him a hundred times that amount is either ready for the millennium or is not looking for opportunities.

INDIANAPOLIS, IND.

INDIANAPOLIS, IND.


TRIPP WAREHOUSE COMPANY
Indianapolis, Ind.

Merchandise Storage and Distribution
 Prompt and Efficient Handling of Pool Cars
 Centrally Located in Shipping District
 Insurance Rate—18 cents per \$100.00
 Motor Truck Delivery
 Service that Satisfies

MUNCIE, IND.

H. L. OLIVER, President
 D. O. HENDERSON,
 Sec. and Treas.

Iron Safes, Ma-
 chinery, House-
 hold Goods and
 Pianos Moved

All Kinds of Mer-
 chandise Stored
 and Distributed

TELEPHONE 141-142


DELAWARE TRUCKING CO., INC. Muncie, Ind.

Carload Shipments Distributed
 Pool Car Distributing Long Distance Hauling
 Motor Service Private Siding to Warehouse
 Free Switching from All Railroads

MUNCIE, IND.

HARDESTY TRUCKING CO.

121 N. Mulberry St., Muncie, Ind.
 Phone 1195

Indianapolis Office: 551 So. Illinois St.
 Phone—Circle 6433.

Furniture Moving,
 Packing, Storage, Shipping

Merchandise Pool Cars Distributed

Our daily trips to Indianapolis offer storage
 and distribution service at a minimum of ex-
 pense for those who wish to operate in this
 territory.

KOKOMO, IND.

Phone 307

"HAULIT"

Office: 905 N. Union St.

Becraft Transfer and Storage Company

KOKOMO, INDIANA

J. H. BECRAFT, Owner and Manager

H H Goods and Mdse. Storage
 Carload Distributing

Packing, Moving and Shipping
 Private Siding—Pennsylvania Ry.

LOGANSPOUT, IND.

G. CARUSO & CO.

ANTONINO PALUMBO, Gen'l Mgr.

1090 North 3rd St., Logansport, Ind.

General Merchandise Storage and
 Forwarding

Long Distance Hauling—City Deliveries
 Pool Cars Distributed
 Trackage on Penna. R.R.
 Free Switching

MARION, IND.

VIRGIL F. LEMON

FIREPROOF STORAGE and WAREHOUSE

Local and Long Distance Moving

Office, 314 S. Branson St.

Marion, Indiana

Furniture Packing, Storing and Shipping

RICHMOND, IND.

Office Phone 2528

Member of Indiana Transfer and Warehouseman Association

**FOREST MONGER
 TRANSFER and STORAGE CO.**

STORAGE, GENERAL DRAYING
 AND TRANSFER

Long Distance Hauling a Specialty
 Quick Service

Storage House 517-519 North D St.

Fire Proof Storage

RICHMOND, IND.

Furniture—Packing—Crating and Shipping
 Distributors of Pool Cars

Collections Given Prompt Attention

Motor Service

SOUTH BEND, IND.

WARNER WAREHOUSE CO.

Merchandise Storage and Distribution

New York Central Siding—Free Switching—Pool Car Dis-
 tribution—Negotiable Warehouse Receipts Issued.

American Warehousemen's Assn.
 Members: Central Warehousemen's Club.

The Men Who Distribute

Seaman Paper Products

Read DISTRIBUTION & WAREHOUSING
 and consult the Shippers' Index

BURLINGTON, IOWA

Solicits your shipping
on the basis of



SERVICE
PROMPTNESS
EFFICIENT HANDLING
EXCELLENT FACILITIES FOR
DISTRIBUTION IN EVERY PHASE

Transit Privilege on Sugar, Potatoes, Lumber & Beet Pulp

Low Insurance Rate

Pool Cars

Storage

Distribution

MERCER TRANSFER & STORAGE CO.

Burlington, Ia.

DAVENPORT, IOWA

Where the
West Begins



Reliable for
20 Years
Saving-freight
The
Mississippi
Rate Break

Fireproof Warehouse, on Trackage—In the Business and Shipping District of Davenport.
Reference—93 Nationally Known Firms Using Our Distributing and Warehouse Service.
Ewert & Richter Express and Storage Co., Davenport, Iowa

CEDAR RAPIDS, IOWA

Cedar Rapids Transfer & Storage Co., Inc.

Fireproof Warehouse Motor Truck Service

Distributing and Warehousing All Classes of
Merchandise, Household Goods and Automobiles
290,000 Square Feet Storage Space

CEDAR RAPIDS, IOWA



LYNCH SERVICE

Complete and Dependable
Your assignments will be promptly
and carefully executed by a skill-
ful and responsible organization.
Modern Equipment—Trackage—New
Fireproof Building

LYNCH TRANSFER CO.

Established 1884

CEDAR RAPIDS, IOWA

Moving — Packing — Shipping — Storage

DES MOINES, IOWA

RED LINE
Transfer & Storage Co., Inc.

Merchandise and Furniture Warehouse
Distributors and Forwarders

Send Your Pool Cars in Our Care

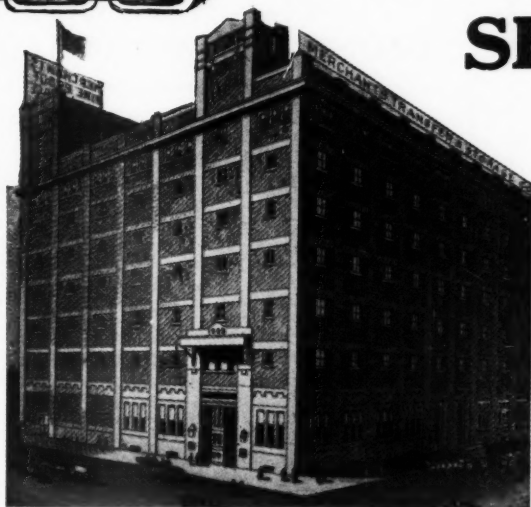
New Fire-Proof Warehouse

Teams or Auto Trucks for Hauling

Free Switching on All Railroads to Our
Warehouse

515 East Court Ave. Des Moines, Iowa

DES MOINES, IOWA

SERVICE
FOR THE SHIPPER

Our service and equipment enables us
to handle your shipments to the best ad-
vantage.

Warehouse located within a short haul
of local depots and wholesale and retail
districts.

Storage for all commodities.

Pool car distribution.

Write for rates and information.

Place spot stocks with us and give your
customer quick service.

200 Package Cars
leave Des Moines
daily, furnishing
24-hour service to
surrounding terri-
tory.

MERCHANTS
TRANSFER & STORAGE CO.

Ninth and Mulberry Streets, Des Moines, Iowa
Members: AWA, NFWA, CWC.



DES MOINES, IOWA

WARE TRANSFER & STORAGE CO.

Furniture Moved, Packed, Stored, Shipped
We Specialize in City Distribution
Covering All Sections of City Daily
IOWA'S LARGEST PIANO MOVERS
Office and Warehouse, 12th and Keesauqua Way
Member I. W. A.

MARSHALLTOWN, IOWA

EWING of MARSHALLTOWN

Connects with three railways, distributes pool cars and spot stocks, stores, moves and ships furniture, hauls by truck, and doesn't charge too much. If you've got anything for Iowa, "Send It To Ewing."

EWING TRANSFER CO., Marshalltown, Iowa

OTTUMWA, IOWA

DAGGETT**TRANSFER AND STORAGE**

Special Attention Given to Merchandise
Distribution and Pool Car Shipments

MEMBERS:
Central Warehousemen's Club
National Furniture Warehousemen's Association

SIOUX CITY, IOWA

BEKINS VAN & STORAGE CO., Inc.

Est. 1890

Moving. Packing. Storage. Shipping. Household Goods and Pianos. Low Insurance Rates. Equipped to handle all kinds of merchandise. Mdse. Warehouse near Fourth and Water Sts. Fireproof Warehouse Sixth and Perry Sts.

SIOUX CITY, IOWA

Berthelsen Transfer and Storage Company

Household Goods packed, stored and shipped.

Local and long distance hauling.

Distributors of Pool Cars.

Private Siding.

Household Goods and Merchandise Warehouse.

1509-11-13-15 East Fourth St.
Sioux City, Iowa

Member of Montul Whse. Service, Inc.

SIOUX CITY, IOWA

Brown Van & Storage Co., Inc.

A. R. BROWN, Pres.

**HOUSEHOLD GOODS MOVED,
PACKED AND STORED
CRATING AND SHIPPING
LONG DISTANCE HAULING
FIREPROOF STORAGE**

514 Eighth St.

Sioux City, Iowa

SIOUX CITY, IOWA

Pianos, Safes and Heavy Hauling
If It's Routed to or Through Sioux City, Bill It to

ROSENTHAL

Fireproof and Steam Heated Storage
300 Iowa Street, Sioux City, Iowa

WATERLOO, IOWA

IOWA WAREHOUSE CO.

Fireproof Warehouse Motor Truck Service

Distributing and Warehousing All Classes of
Merchandise, Household Goods and Automobiles

KANSAS CITY, KANSAS

**THE INTER-STATE
TRANSFER & STORAGE COMPANY**
PACKING, MOVING, STORING AND SHIPPING
1106-8-10 North Fifth Street

L. J. Canfield, Proprietor Both Telephones 0075
We handle approximately 75% of all the freight shipped to Kansas City, Kan.—
L. J. Canfield.

PITTSBURG, KANSAS

Best Location for KANSAS, MISSOURI, and OKLAHOMA
MERCHANDISE STORAGE and POOL
CAR Distribution

Located on the Atchison, Topeka & Santa Fe, Joplin-Pittsburg, Kansas City Southern, Missouri Pacific, and St. Louis & San Francisco Railways.

PITTSBURG TRANSFER & STORAGE CO., Inc.
P. O. Box 527

TOPEKA, KANSAS.

N. F. W. A. A. W. A. C. W. C.

**THE TOPEKA
TRANSFER & STORAGE CO., Inc.**

Established 1880

Three houses for
Merchandise—Household Goods

Our private switch connects with the A. T. & S. F., C. R. I. & P., U. P., and M. P. Free switching. Motor van, packing and reconditioning services. Prompt remittance of advanced charges and collections. POOL CAR DISTRIBUTION and shipment from spot stocks of merchandise at low rates, accurately and promptly. Consign a carload for a test.

WICHITA, KANSAS

Lowest Insurance

"Where Service Counts"

Storage Distribution and Forwarding

BROKERS OFFICE & WAREHOUSE CO.

—Bonded—

143 North Rock Island Ave.

Fireproof



Private Siding. Direct Connection all Railway Lines Entering City.

Centrally Located in the Jobbing District and to Railway Stations.

Send us a carload and watch closely.

M. E. Cuykendall, Mgr.

WICHITA, KANSAS

A. F. JONES, Pres. E. W. JONES, Vice-Pres. L. B. JONES, Treas.
J. H. BRUGH, Sec., Gen. Mgr.



General Warehousing
Storage, Forwarding and Distributing

300,000 SQUARE FEET

CAPITAL \$100,000.00



Three Warehouses (Fireproof)
Low Insurance. Complete Retail Connections. We Lend
at Current Rates Upon Our Own Warehouse Receipts.

UNITED WAREHOUSE CO.

Wichita, Kansas Kansas City, Mo.
115 N. Meade & 815 E. 2nd 2114 Central St.

LEXINGTON, KY.

W. R. MILWARD

Furniture Storage

Packing and Shipping

LEXINGTON 159-161-163 North Broadway KENTUCKY
ESTABLISHED 1879

LEXINGTON, KY.

THE UNION

TRANSFER and STORAGE
COMPANY, Inc.
THREE LARGE
WAREHOUSES

Fireproof and Non Fireproof. Centrally Located.
Warehouses on Private Sidings. Free Switching Charges.
DISTRIBUTION OF POOL CARS A SPECIALTY
MERCHANDISE AND HOUSEHOLD GOODS
WE FURNISH MOTOR TRUCKS AND TEAM SERVICE
Member American Chain of Warehouses

LOUISVILLE, KY.

Carry Spot Stocks in Louisville

Where Concentrates the Golden Flood
of Ohio River Valley Commerce
Louisville Public Warehouse Co.

W. N. Cox, President E. H. Bacon, Vice-President



LOUISVILLE, KY.

SAFETY TRANSFER AND STORAGE CO., INC.

"Louisville's Leading Movers & Packers"

Clay and Main Streets
We Move, Pack, Store and Forward Household
Goods
Member N. F. W. A.

LOUISVILLE, KY.

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Established 1875

C. S. Tabb's Son, Mgr.

NEWSPRINT—RAILWAY STORAGE

GENERAL HAULING

NEW ORLEANS, LA.

NEW ORLEANS

In the heart of the Commercial District

at New Orleans we have a distrib-
uting depot for package freight,
operated for the particular serv-
ice of the traffic manager by a
specialized organization that
will handle orders as
promptly and efficiently
as your own ship-
ping depart-
ment.

Central
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Shipside
Terminals

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The most centrally located
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The only public warehouse
in New Orleans on the water
front — wharf facilities for
the largest ocean steamers

COMMERCIAL WAREHOUSES

The Men Who Distribute

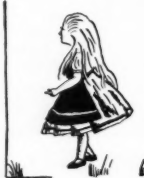
Squibb's Toilet Articles

Read DISTRIBUTION & WAREHOUSING
and consult the Shippers' Index

NEW ORLEANS, LA.



Alice
in
Storageland



THE White Rabbit took Alice by the hand and led her to a window. Alice went meekly, wondering what surprise the White Rabbit had for her now. Her strange adventures in Storageland were opening her eyes to the marvelous amount of effort the Standard Warehouse at New Orleans made to smooth the way for shippers storing or distributing goods there, and now there was such a mysterious air about the White Rabbit that she resolved not to be too astonished at what he might show her.

But, try as she could, she could not suppress a gasp of astonishment. The window opened up a vista of enchanting romance, and she beheld the masts of great sea-going vessels that were visible above the great, broad roofs of cargo sheds.

"Why, how close the ships are!" she said. "One might almost leap out of this window on the deck of a steamer and go sailing off to the end of the world—only, of course, Nurse would have me brought home to do sums. I'd no idea the river was so close to Storageland!"

"It is indeed close—so close that Standard Warehouse clients' goods can be handled with a minimum amount of labor and can be taken from the warehouse to ships for coast-wise points, or for any port in the world," the White Rabbit confirmed.

"Oh, yes—and with railroad tracks all around the building and some right through the middle of it," Alice summed up, "shippers are certainly offered unusual transportation and distribution service by this warehouse."

(Watch for further Adventures of Alice in Storageland.)

Standard Warehouse Co.

100 Poydras St.

New Orleans, La.

Second Port, U. S. A.

Copyright, 1925, by R. A. Sullivan

NEW ORLEANS, LA.

STORAGERS IN OTHER CITIES:

Here's why you can trust your clients' goods with

O. K. STORAGE & TRANSFER CO.

New Orleans

*We Treat Clients You Refer to
Us with Every Consideration*

**Our Building Is Absolutely Fireproof
We Make Remittances Promptly
We Are Financially Responsible**

*We Specialize in Household Goods
and Office Furnishings Exclusively*

WE KNOW HOW

General Manager

O. K. Storage & Transfer Co.

New Orleans, La. Louisville, Ky. Memphis, Tenn.

BANGOR, MAINE

McLAUGHLIN WAREHOUSE CO.

Established 1875

Incorporated 1918

General Storage and Distributing



**Rail and Water Connection
Private Siding**

Member

American Warehousemen's Association
American Chain of Warehouses

PORTLAND, MAINE

Galt Block Warehouse Company

Portland, Maine

Storage, General Merchandise, Household Goods and Automobiles

Private track, sprinkler equipped, low insurance rate. Storage in Transit on Flour, Cereals and Canned Goods.

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J. S. SAWTELLE, Manager

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THOS. H. VICKERY, President

BALTIMORE STORAGE CO.1710-20 Edmondson Avenue Charles and 26th Sts.
Bruce St. and Summit PlaceMember { N. Y. F. W. A. Operates 3 Warehouses.
Balt. F. W. A.

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Low Insurance Rates

Merchandise Warehousing

&

DistributionComplete modern Warehouse Service
to all shippers.

Pool-Cars a Specialty

Located in heart of wholesale district

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"We Give Service, Don't Promise It."

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Est. 1896**DAVIDSON TRANSFER
& STORAGE CO.***"Baltimore's Leading Movers"*

FURNITURE PACKED, SHIPPED OR STORED.

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There Is Profit and Service in

The logo features the word "Norman" in a small, sans-serif font inside a circle, followed by the word "Geipe" in a large, stylized, cursive script.**Long Distance Removals**Specializing in long distance moving, we cover
the principal cities throughout the Eastern
section of the United States with regularity.
Our experience and facilities will solve your
long distance problems.In addition you will find our service profit-
able to you and satisfactory to your
customers.Loads or part loads of household goods, office
equipment or merchandise to or from Balti-
more, Washington, Richmond, Pittsburgh,
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Trenton, New York, Albany, Bridgeport, Hart-
ford, Springfield, New London, Providence and
Boston or en route.Utmost care used with special compartments
for breakable or fragile articles. Write or
phone me when you want quick service. Get
particulars of how we make it profitable for
you to use our service.**J. NORMAN GEIPE**

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Call Day or Night SKIDMORE 1822

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STORAGE CO.**

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*Household Goods Exclusively
Your Clients Efficiently Served
All Collections Promptly Remitted*

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National Furniture Warehousemen's Association.**Baltimore's Modern Fireproof Warehouse**

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Baltimore, Md.

Located in the center of Baltimore's wholesale
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L. C. L. shipments accepted. Motor truck ser-
vice. Get our rates before making consignments
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McCormick Warehouse Company
McCormick BuildingPrivate Railroad Siding
General StorageAll Railroad Connections
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on New England C. L. Movement

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Established 1879

**MONUMENTAL STORAGE
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ABSOLUTELY FIREPROOF WAREHOUSE

*Furniture Storage — Packing — Moving
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Members N. F. W. A. and B. F. W. A.

The Men Who Distribute

Pepsi-ColaRead DISTRIBUTION & WAREHOUSING
and consult the Shippers' Index

BALTIMORE, MD.

Security Storage & Trust Company

Resources Over One Million Dollars

15 W. North Avenue

FIREPROOF WAREHOUSES

MOTOR EQUIPMENT

EFFICIENT SERVICE

TO WAREHOUSEMEN

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National Furniture Warehousemen's Association*

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20 Mill Street, Arlington, Massachusetts

Fireproof and Semi-Fireproof Sections

Household Goods Exclusively

Modern Heated Piano Room

Separate Locked Rooms for Furniture

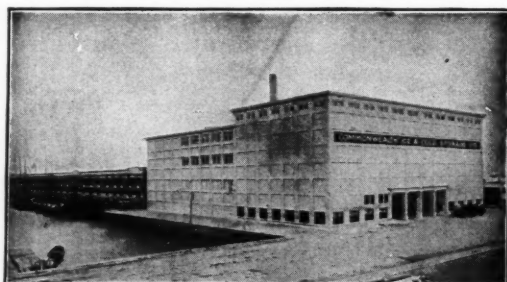
First-Class Auto-Truck Service

Packing and Shipping Anywhere
Consignments Solicited

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**For Service in Boston
It's Commonwealth**

Where Rail Meets Sail



*Cold storage for all classes of perishable merchandise.
Directly connected side track on New York, New
Haven & Hartford.*

*General storage space for all classes of merchandise.
Perfect local distribution facilities.*

**COMMONWEALTH
ICE AND COLD STORAGE CO.**

220 Northern Avenue, Boston, Mass.

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FOREST HILLS, MASS.

**The Forest Hills Storage and Warehouse
(Bonded)
126 CALL STREET**

General Merchandise—Distributing—Separate Rooms for Furniture.
Bonded Warehouse. Our own side track—direct.

N. Y., N. H. & H. R. R. Consign to Forest Hills Station.

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Francis E. Buckley, Mgr.

Est. 1880

**Dorchester Fireproof
Storage Warehouse**

Moving—Packing—Shipping

We operate a fleet of modern enclosed
padded vans.

**Our complete service covers Boston
and all suburbs.**

**Office and Warehouse:
690 Dudley St., Boston**



Members { N. F. W. A.
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FURNITURE AND PIANO MOVERS

**HOME, OFFICE and
LONG DISTANCE MOVING**

Having a five story building comprising forty-one thousand square feet devoted exclusively to the Packing and Storing of Household Goods and Office Furniture for shipment.

We are the largest concern in New England doing this kind of work, operating a fleet of trucks for intercity and interstate shipments, also take care of your collections and represent you at this end.

46 Bromfield St. Main Office Boston
587 Columbia Road Dorchester Office: Dorchester, Mass.
76 Broadway Packing Department: South Boston

BOSTON, MASS.

GIBBS EXPRESS CO. YETTEN'S STORAGE
ESTABLISHED 1845

POOL CAR DISTRIBUTION

LeBaron R. Yetten

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General Merchandise Storage and Distributing

Pool Car Shipments. Location in the Center of Greater Boston. B. and A. R. R. Siding.

MOTOR TRUCK SERVICE.

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Terminal Wharf & Railroad Warehouse Co.

50 Terminal St.

Boston (29)

Mass.

STORAGEB. & M. RR.
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E. Street Stores
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Boston, Mass.

Direct Track Connection

New York, New Haven & Hartford Railroad

Free and Bonded Storage of
General Merchandise

Wool Consignments Especially Solicited

FORT HILL STORAGE WAREHOUSE

78-84 Purchase Street

415-429 Atlantic Avenue

General Merchandise

Particularly desirable for Canned Goods or any Merchandise requiring a non-freezing temperature.

Let us submit rates. Store with us and get service.

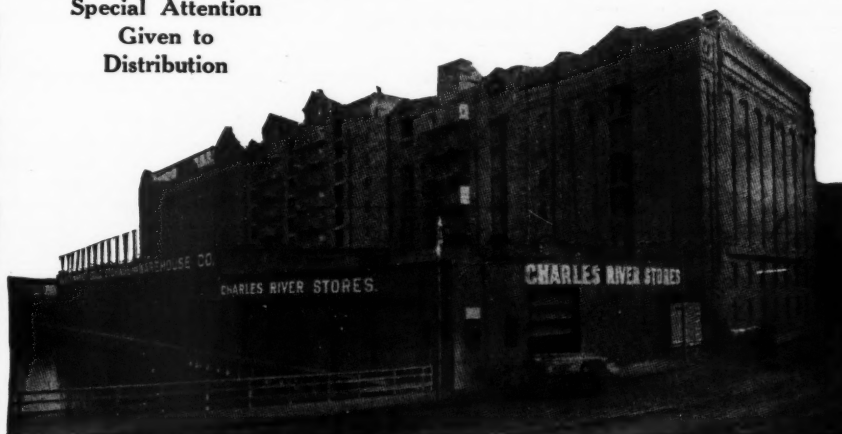
**WILLIAM B. HARPER**

General Manager

BOSTON, MASS.

Quincy Market Cold Storage and Warehouse Co.

STORAGE FOR FREE AND BONDED MERCHANDISE

Special Attention
Given to
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Long distance transfer by auto truck
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FREIGHT FORWARDERS**

Household Goods and General Merchandise

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Distributors of General Merchandise
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 NEW BUILDING B. & M. R. R. SIDING
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Pick Your Consignee

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In fact every intelligent service that could be expected of a personally operated warehouse is performed with strictest attention to all the details of each transaction.

Serve your New England customers through our warehouses at

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*Logical point of distribution
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Merchandise Division

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**NORTHEASTERN
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Pool Car Distribution

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 MEMBERS A. W. A. AND N. F. W. A.

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The Riverside Truck & Storage Co.

Storage Household Goods and Merchandise

Pool Car Distribution
 25000 ft. Floor Space. Private Siding
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 2nd and Adams Sts., Bay City, Mich.

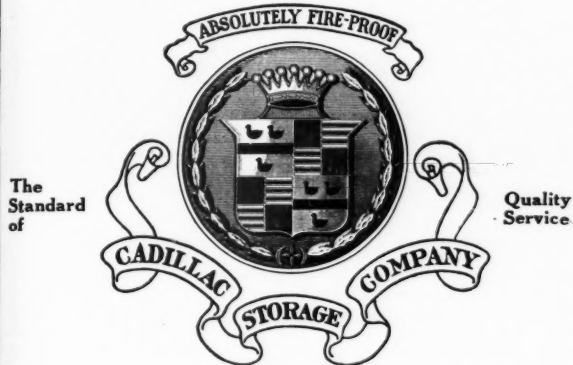
The Men Who Distribute

Simmons Beds

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 and consult the Shippers' Index

DETROIT, MICH.

**Your Big Desire Fulfilled—
The House of Personal Service**



**DETROIT
MICHIGAN'S LARGEST FIREPROOF
STORAGE WAREHOUSE**

A Safe Depository for

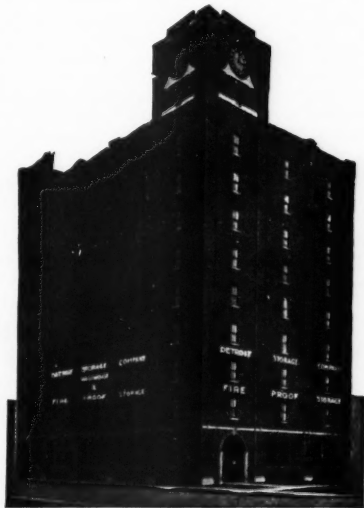
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We remit on receipt of Documents and Goods

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MOVING, PACKING, SHIPPING
Corner East Grand Boulevard and Beaubien St.,
DETROIT, MICH.

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DETROIT, MICH.

GREAT CENTRAL WAREHOUSE CO.

1321—12th Street
MERCHANDISE WAREHOUSING
Private siding Michigan Central R.R., daily 40 car capacity
Courteous, Prompt and Efficient Service
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Our location in heart of Detroit's west side activities— $\frac{1}{2}$ mile from all freight depots and boats, center of all wholesale and jobbing district.
GREAT CENTRAL BUILDS YOUR BUSINESS

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**WE MOVE BY VAN WITHIN 1000 MILES
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**The Michigan Terminal
Warehouse Co.**

See our advertisement on front inside cover, page 2.

DETROIT, MICH.

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TO THE ROBINSON STORAGE COMPANY
434 E. Willis Avenue Detroit, Michigan
Via MC, Wabash or NYO Russell St. Dely, or GT Trombly St. Dely.

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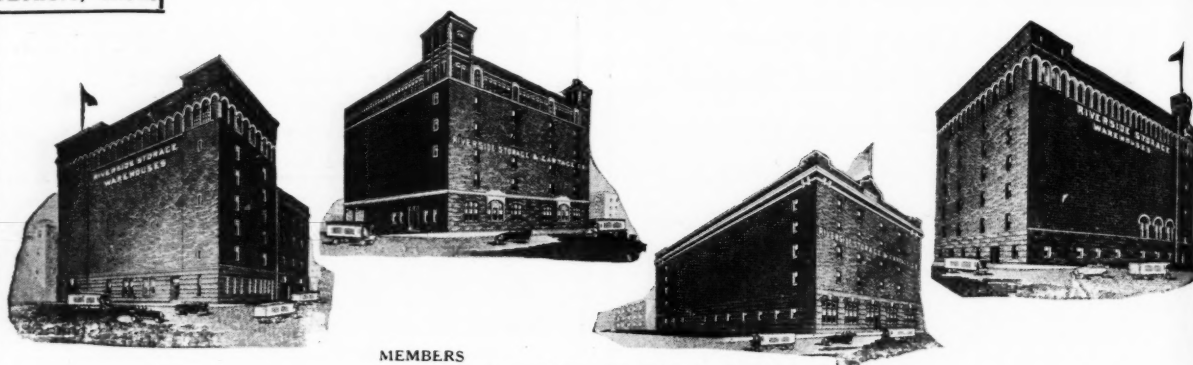
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A Specialty
SHIPPING

ROBINSON

The Men Who Distribute
California Raisins

Read **DISTRIBUTION & WAREHOUSING**
and consult the Shippers' Index

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"SERVICE WITH SECURITY"

Let us represent your interests in Detroit. Every facility is provided for the most efficient handling of your shipments of household effects.

Service personally directed, coupled with efficiency and responsibility, will result in a satisfied customer for you at destination.

RIVERSIDE STORAGE and CARTAGE CO.

CASS and CONGRESS STS.

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DETROIT, MICH.

WOLVERINE STORAGE CO.

EAST JEFFERSON AVENUE

AND

TERMINAL RAILROAD

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Moving

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LARGEST FIREPROOF WAREHOUSE IN STATE

Members National Furniture Warehousemen's Association

GRAND RAPIDS, MICH.

Largest Commercial Warehouse in Western Michigan

Located within four blocks of
all principal freight depots

Instant Service. Merchandise Warehouse only. Only warehouse in Grand Rapids operating our own transfer business in addition to the warehouse. We operate 36 horse drawn vehicles and 12 motor trucks. Shipments made same day orders are received. Pool Car Distribution. Private R. R. Siding. Free Switching. Michigan Central R. R.

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FLINT FIREPROOF STORAGE CO.

615 EAST SIXTH AVE.

HOUSEHOLD GOODS STORAGE

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If Your City Isn't
Represented Here

Put it on the shippers' map by
inserting your card in this space.

GRAND RAPIDS, MICH.

Most Up-to-Date Warehouse in Michigan

Concrete Construction.
Absolutely Fireproof. Sprinkler Risk.
Lowest Warehouse Insurance Rate in State.
Track Capacity, 25 Cars.
Latest and Best Equipment for Handling

General Merchandise Storage

Cartage Facilities.
High Grade Service Guaranteed.
Negotiable Warehouse Receipts Issued.
Pool Car Distribution.

Furniture Manufacturers Warehouse Co.
505-511 Fulton Street, West Grand Rapids, Mich.

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Wealthy Street and Charles Avenue, Grand Rapids, Mich.
Fireproof and Non-Fireproof Warehouses
100,000 Square Feet

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Elec. RR.

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E. R. McCoy, Gen. Mgr.

Kent Storage Company

General Merchandise Cold Storage

Storage—Reforwarding—
Distributing

Members—American Chain of Warehouses
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Front Ave. and Pennsylvania Tracks

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**Automobiles
Machinery
Merchandise
Foodstuffs
Furniture
Household Goods
Rugs, Etc.**

Twelve special RICHARDS Warehouses in Grand Rapids are completely equipped and carefully classified for the storage of practically every known commodity. Operated under centralized control. As efficient as your own branch, without the expense and worry.

RICHARDS STORAGE COMPANY

Michigan, Ottawa and Ionia Avenues
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**Western Michigan
Transfer & Storage Co.**

Grand Rapids, Mich.

Established 1908. Most complete facilities for Storing, Moving, Distributing. 2 Warehouses, 100,000 sq. ft. Every modern convenience, resulting in service of the better kind.

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Distribution of Merchandise Pool Cars. Free Switching. Private Siding N. Y. C. & M. C. R. R. Two Warehouses—519 South Park Ave., 558 Liberty St.

Storage

General Trucking

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**THE LARGEST MERCHANDISE WAREHOUSE
IN SOUTHWESTERN MICHIGAN**

Private Siding. Free Switching Service.
Moving—Packing—Storage

NATIONAL STORAGE COMPANY

Fireproof Warehouse
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"Center of Michigan"

Fireproof Storage & Transfer Co.

SERVICE—SAFETY—SATISFACTION—GUARANTEED

MOVE—PACK—CRATE—TRANSFER
FIREPROOF WAREHOUSE—PRIVATE SIDING
POOL CAR DISTRIBUTION

LANSING, MICH.

LANSING STORAGE COMPANY

The only modern fireproof warehouse in
Lansing exclusively for household storage.

RUG—TRUNK—SILVER VAULTS

WE KNOW HOW
440 No. Washington Ave.

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CENTRAL WAREHOUSE CO.

GENERAL WAREHOUSEMEN AND FORWARDERS
MERCHANDISE DISTRIBUTION

SPRINKLER SYSTEM

Private Sidings M. C. R. R.
SAGINAW, MICH.

Office
N. Michigan Ave.

DULUTH, MINN.

Established 1892

Thirty-Two Years of Experience

DULUTH VAN & STORAGE CO.

18 Fourth Avenue, West

Modern Storage Facilities for
Household Goods & Merchandise

POOL CAR DISTRIBUTORS

Located on Terminal Tracks—No Switching Charge

DULUTH, MINN.

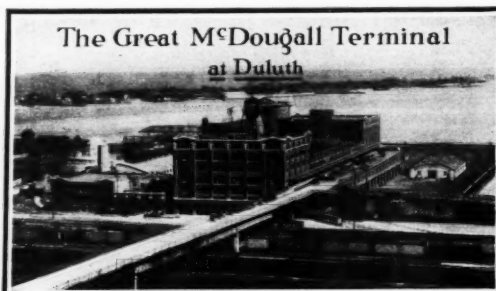
**HART
TRANSFER & STORAGE CO.**

Freight, baggage and express transfer. Furniture packing and moving. Light and heavy hauling. Private locked rooms. Heated piano and painting rooms. Advance charges remitted instantly. Packing. Storage, Shipping. Largest Padded Vans in the city. Private switch. No switching charges.

POOL CARS DISTRIBUTED

17 North Fifth Ave., West Duluth, Minn.

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DULUTH—the natural Distributing point for the Great Northwest

It is the most westerly port on the Great Lakes, also the terminal harbor of 10 Northwestern Railway Systems. Its harbor (in point of tonnage) is second to New York.

Our great fireproof concrete warehouse (with a 10c. insurance rate) is located in the heart of Duluth Harbor, in the midst of railroad yards and the center of the wholesale district with excellent rail, dock and transfer connections.

Free deliveries to our docks by all Package Freight Lines and on all freight routed "Lake and Rail."

350,000 sq. ft. general storage—1,000,000 cu. ft. cold storage
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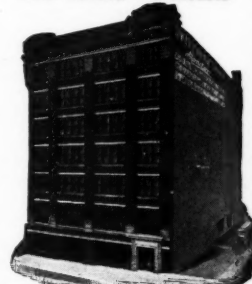
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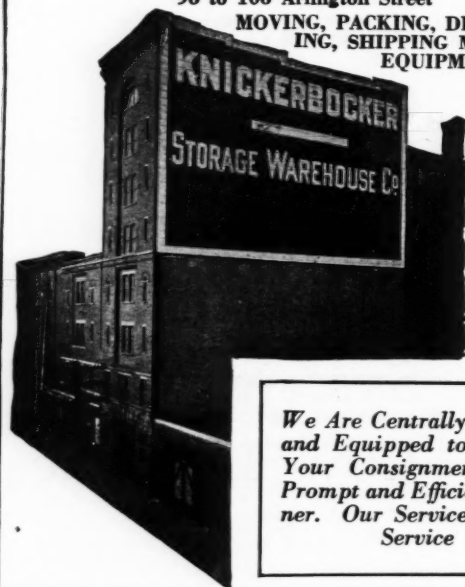
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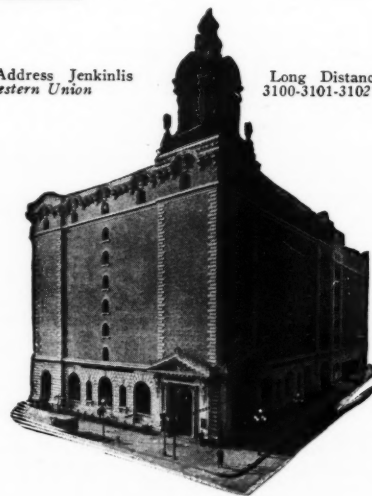
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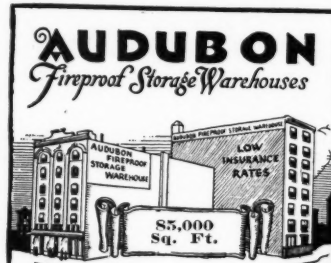
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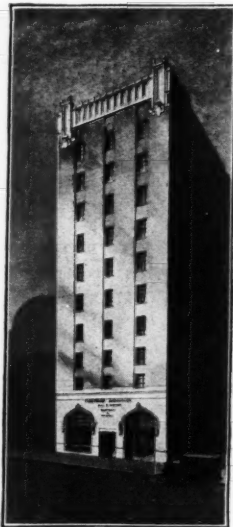
KEEP IT UP!

One step won't take you very far, you've got to
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One inch won't make you tall, you've got to keep
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One little "ad" won't do it all, you've got to keep
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We have our own Railroad Siding.

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We solicit your inquiries.

McNALLY BROS., INC.

Bush Terminal

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from the companies listed in this section—they are the "live wires" of the field and will handle your shipments promptly and efficiently.

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**Quality
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Established 1875



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STORAGE MOVING PACKING SHIPPING
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MERCHANDISE WAREHOUSEMEN

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We solicit your Syracuse business. Motor delivery service. Careful attention to collections. Satisfaction to yourself and customer guaranteed.

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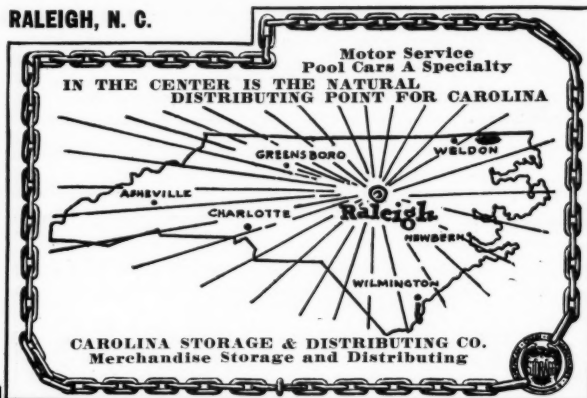
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LARGEST FIREPROOF STORAGE CO.

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Commercial & Household Goods

LOCATED IN THE HEART OF AKRON
on B & O RAILWAY—FREE SWITCHING

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 HOUSEHOLD GOODS AND MERCHANDISE
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**Our Experience and Modern Facilities Make
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 Private Sidings Free Switching

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Cincinnati Terminal Warehouse Co.

See our advertisement on front inside cover page.

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STORAGE Warehousing and Distributing

CAPACITY OVER 300,000 SQ. FT.
 Sprinkler System.

Low Insurance Rate

Railway siding.
 Prompt and efficient services.

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CINCINNATI, OHIO

Officers—Fred Pagels, President; Arthur Pagels, Secretary;
 R. W. Pagels, Treasurer.

The Fred Pagels Storage Co.

Fireproof and Non-Fireproof

Business Established in 1867 and built up by

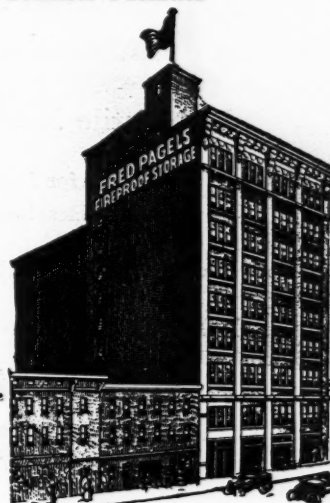
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Prompt Deliveries by Motor
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MAIN OFFICE
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Established 1858

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 222 and 224 East Front Street

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Fireproof and Non-Fireproof Storage

Over 100,000 square feet in the heart of Cincinnati

Let Us Store, Move, Pack, Ship or Distribute Your
 Automobiles, Furniture and Merchandise

2000-2020 ELM ST.

Est. 1899

CLEVELAND, OHIO

THE CLEVELAND STORAGE CO.

Established 1884

Offices: Guardian Building

Mercantile Storage Only

Pool Cars for Distribution
and Reshipment

Convenient to Business and Shipping District

LOW INSURANCE RATES
Sprinkler System3 Warehouses, Private Siding,
C. C. C. & St. L. R. R.

CLEVELAND, OHIO

The Knickerbocker Storage Co.

7724 Detroit Ave.

Cleveland, Ohio

HOUSEHOLD STORAGE

Moving

Packing

Shipping

Member American Warehousemen's Assn.

CLEVELAND, OHIO

Mercantile Storage and General Trucking

Bulk Oil Storage, 125,000 Gallons. Low Insurance. Sprinkler
System. Private Siding on C. C. C. & St. L. R. R. Pool Cars for
Distribution. Motor Truck Service.THE CURTIS BROS. TRANSFER COMPANY
Cleveland, Ohio

CLEVELAND, OHIO

Ship Your Cleveland Freight

Direct care Gregg Cartage Co. Freight to and from depots.
Storage and delivery on request.

Distribution of Samples, Packages and Circulars.

GREGG CARTAGE & STORAGE COMPANY

Storage and Warehouse, 633 Huron Road CLEVELAND, OHIO

KEEP IT UP!

One step won't take you very far, you've got to
keep on walking;One word won't tell them what you are, you've
got to keep on talking;One inch won't make you tall, you've got to keep
on growing;One little "ad" won't do it all, you've got to keep
'em going.Sent to DISTRIBUTION & WAREHOUSING
by George S. Loefer, Vice-President of the
American Warehousemen's Association.

CLEVELAND, OHIO

THE LAKESHORE MOVING & STORAGE CO.

636 East 105th St.



Members

The Ohio Motor Truck Club

CLEVELAND, OHIO

MEMBERS A.W.A. O.W.A.

LEDERER

SERVICE

TERMINAL

BUILDS BETTER BUSINESS

MERCANTILE WAREHOUSING AND DISTRIBUTING

CLEVELAND, OHIO

EVERY service in Storing, Moving, Packing and Shipping under expert supervision. Valuable such as works of art may be entrusted to our care with the assurance of safe delivery or storage. Courtesy with efficiency our motto.

Storing, Moving, Packing, Shipping

The
MEAD REDHEAD COMPANY

1108 East 123 St.

Cleveland, Ohio

CLEVELAND, OHIO

Ninth Street Terminal
Warehouse Co.

1200 West Ninth St.

See our advertisement on front inside cover page.



CLEVELAND, OHIO

At our Blue Rock Warehouse no item of equipment whatever has been omitted to provide the last word in high grade moving and storage service.



The LINCOLN
STORAGE Co.

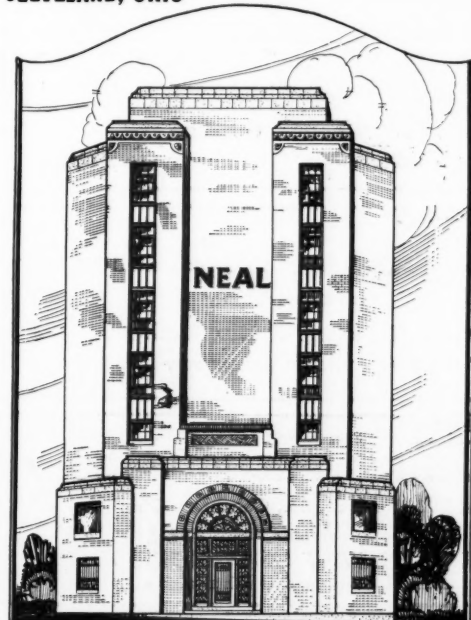
Main Office: 5700 Euclid Ave., Cleveland, O.
Depositories at 5660-5704 Euclid Ave. and 11201 Cedar Ave.

GEO. A. RUTHERFORD, Pres.
W. R. THOMAS, Vice-Pres.
W. H. TURNER, Secy. and Treas.

Car load shipments to 11201 Cedar Ave., N. Y. C.
B-It Line—L. C. L., Penna., Euclid Ave. Sta.—
Other R. Rs. to Cleveland, O.

Member: N. F. W. A., A. W. A., and C. F. W. A.

CLEVELAND, OHIO



NEAL

Offers City Wide Service

With the Completion of Our New Eight-Story

WEST SIDE—LAKEWOOD BRANCH

LOCAL warehouses in each major section of the city.

Private switching facilities on the Nickel Plate Railroad.

Personal attention, backed by every facility for cooperation, given to shipments into Cleveland and surrounding territory.

The NEAL FIREPROOF STORAGE CO.
CLEVELAND

MOVING

SHIPPING

STORAGE

A. W. NEAL, Pres. W. R. KISSICK, Sec'y. C. J. NEAL, Vice-Pres. and Treas.

WHEN WRITING ADVERTISERS MENTION DISTRIBUTION & WAREHOUSING

CLEVELAND, OHIO

THE SCOTT BROS. Fireproof Storage Co.

1838-40 East 55th Street



MEMBERS

Cleveland Furniture Warehousemen's Association.
National Furniture Warehousemen's Association.

CLEVELAND, OHIO

99 Out of 100 Say the Same

DU PONT HOUSEHOLD APPLIANCE CO.

HOUSEHOLD SPECIALTIES

PHONE 572-528

854 SOUTH HILL STREET
LOS ANGELES, CALIF.

October 6, 1924.

Windermere Storage Co.,
Cor. Doan & Euclid Sts.,
East Cleveland, Ohio.

Gentlemen: ATTN. MR. HEIL

This message is a little delayed but I want to take this opportunity of thanking you for the careful attention given my household goods in connection with the shipment of same to me here at Los Angeles.

Everything came through in excellent shape, in fact, I could not even find one scratch on any piece of furniture. The storage company who uncrated the shipment stated that in all their experience they had never seen furniture more carefully wrapped and crated.

Service of this kind cannot help but be appreciated and I want to add my appreciation to your long list of satisfied customers.

Very truly yours,

DU PONT HOUSEHOLD APPLIANCE CO.

By

Manager

DM,MS.

We Solicit Your Business on Same Basis

THE WINDERMERE STORAGE CO.

Formerly the Windermere Transfer & Moving Co.

14441 Euclid Ave.

East Cleveland, Ohio

1451-5-9 Hayden Ave.

C. F. W. A.

Members of
O. C. H.

N. F. W. A.

COLUMBUS, OHIO

The W. Lee Cotter Warehouse Company
32 East Swan St.

Merchandise Storage and Distribution

Motor Freight Service

Member A. W. A., O. W. A.

COLUMBUS, OHIO

Consign H. H. G. to

EDWARDS at Columbus

Edward's Service guarantees the shipper all that he expects.

PACKING STORAGE
LOCAL and LONG DISTANCE
MOVING

The Edwards Transfer & Storage Company
Columbus, Ohio

Members NFWA—OACH—OWO—NTMTOA

COLUMBUS, OHIO

Safety First

The Fireproof
Warehouse & Storage Company

1018-30 North High Street
Columbus, Ohio

TRANSFERRING — STORING — PACKING

We have one of the finest warehouse plants in the state; being steam heated throughout, equipped with a sprinkler system, absolutely fireproof. The cheapest rate of insurance. Located handy to all railroads, we are able to deliver the best service obtainable anywhere. We solicit your shipments to our city and assure you we will reciprocate. P. A. DOLLE, General Manager.

Motor Truck Service

Vaults for Valuables

Private Rooms

COLUMBUS, OHIO.

The Merchandise Storage Company

Columbus, Ohio

General Storage & Distribution

SERVICE THAT WILL SATISFY

COLUMBUS, OHIO

THE OHIO WAREHOUSE CO.

544-560 Park St. So., Columbus, Ohio

IN THE HEART OF OHIO

IN THE HEART OF COLUMBUS

General Storage and Distribution

DAYTON, OHIO

THE UNION STORAGE CO.

U. S. BONDED

BAINBRIDGE, BACON & STATE STREETS

MERCHANDISE STORAGE TRANSFER DISTRIBUTION

MANSFIELD, OHIO

The W. Lee Cotter Warehouse Company
40 W. Third St.*Household Goods and Merchandise Storage*
Fireproof Warehouse *Motor Freight Service*
Member N. F. W. A., A. W. A., A. C. W.

MARION, OHIO

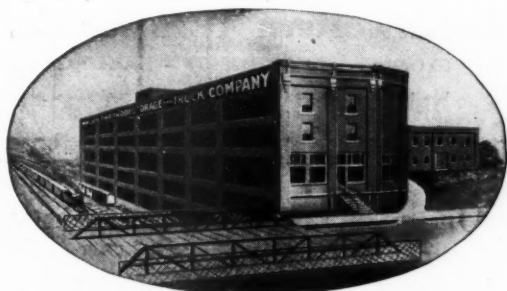
**MERCHANTS
Transfer Company**

160 McWILLIAMS COURT, MARION, OHIO

Heavy Haulage Our Specialty. General Distribution and Storage of Merchandise. Motor Vans for Local and Long Distance Moving. Storage for Household Goods, Automobiles and Machinery. Packing and Shipping. Private Siding New York Central Lines.

MEMBER N. F. W. A.

SPRINGFIELD, OHIO

**Springfield, Ohio
Shipments!****Bill through
WAGNER
Fireproof Storage and Truck Co.**

Siding on Pennsylvania Lines. Free Switching Tariff. Excellent and complete facilities for Pool Car Shipments. Light and Heavy Motor Truck Service for

City and Inter-City Transportation.

A warehouse service that embodies every modern facility for the storage and distribution of merchandise.

TOLEDO, OHIO

The W. Lee Cotter Warehouse Company
201 Cherry St.*Merchandise Storage and Distribution*
Excellent Service
Member A. W. A., A. C. W.

TOLEDO, OHIO

**"SHIP TO TOLEDO AND
CONSIGN TO DEPENTHAL"***We are specialists in furniture packing, local and long distance furniture hauling.*
Storage for general merchandise and household goods.
Connections with all railroads entering the city.
Private siding on the B. & O.
Member of National Furniture Warehousemen's Association.
DEPENTHAL TRUCK & STORAGE CO.
Main Office, 108 Summit Street, Toledo, Ohio

TOLEDO, OHIO

**THE GENERAL
FIREPROOF STORAGE CO.**
651-655 STATE STREET*Household Goods Exclusively**Members:* The National Furniture Warehousemen's Ass'n
American Warehouse Association

TOLEDO, OHIO

HOUSEHOLD GOODS EXCLUSIVELY

Established 1894

The H. C. Lee & Sons Co.

TOLEDO'S LEADING MOVERS

STORAGE

MEMBER N. F. W. A. Toledo, Ohio

TOLEDO, OHIO

Let "RATHBUN" Do It**THE RATHBUN CARTAGE CO.**

195 and 197 So. St. Clair St.

Equipment Up to 20 Tons Capacity

*Storage of Household Goods, Pianos and
Merchandise*

Members Nat'l F. W. Assn.

YOUNGSTOWN, OHIO

THE WM. HERBERT & SON CO.

ESTABLISHED 1887

INCORPORATED 1922

CRATING — PACKING — MOVING**STORAGE**

YOUNGSTOWN, OHIO

CHICKASHA, OKLA.

Rock Island Transfer & Storage Co.*Merchandise Pool Cars Distributed*

Logical Distributing Point of the South West Territory

Chickasha, Okla.

MUSKOGEE, OKLA.

Muskogee Transfer & Storage Co.**2—Fireproof Warehouses****Merchandise and Household Goods****Stored—Pool Cars Distributed****Railroad Siding.**

OKLAHOMA CITY, OKLA.



WAREHOUSE No. 2

IN OKLAHOMA

We are the leading warehouse specialists and best equipped to serve your needs. Rail facilities for twenty cars, fireproof buildings, motor truck and team service. An organization of experts, 30 years under present management.

LOWEST INSURANCE RATE IN OKLAHOMA

O. K. Transfer & Storage Co.

A. C. WEICKER, President

OKMULGEE, OKLA.

HAL GRIFFIN, THE TRANSFER MAN

Hauling, Storing and Shipping
Distribution Service

West Third between Frisco and Okmulgee Northern R. R.

TULSA, OKLA.

Joe Hodges Fireproof Warehouse

Moving — Packing — Storage

Mixed Cars a Specialty. Large docks for sorting. We solicit your shipments to our city and assure you we will reciprocate and guarantee prompt remittance. Located on Railroad. Best Service Obtainable.

TULSA, OKLA.

Tulsa Storage & Transfer Co.

Fireproof Warehouse

Pooled car distributors—private siding "Frisco" merchandise and H. H. Goods—6 railroads into Tulsa—A. T. & S. F., Frisco, M. V., M. K. & T., O. U. R. & S. S.

The Men Who Distribute

Indian Motorcycles

Read **DISTRIBUTION & WAREHOUSING**
and consult the Shippers' Index

PORTLAND, ORE.

General Warehousing
Storage - Distribution
Portland
Oregon



*Logical distributing point
of the
Pacific Northwest Territory*

PORTLAND, ORE.

B E K I N S

MOVING and STORAGE

Portland, Ore. Seattle, Wn. Vancouver, B. C.

PORTLAND, ORE.

G. W. CUMMINGS
President

J. H. CUMMINGS
Secretary

Northwestern Transfer Co.

Incorporated 1888

STORAGE - DISTRIBUTION - HAULING

Free Trackage All Railroads

We Make a Specialty of Distributing Pool Cars
Office, 64 Front Street

PORTLAND, ORE.

Oregon Transfer Company

Established in 1848

474 Glisan Street Portland, Oregon

U. S. Bonded and Public Warehouses

Storage, Distribution and Forwarding
Specialists

Largest Warehouse and Transfer Organization in Pacific Northwest. We own our buildings and equipment.

ALLENTOWN, PA.

Hummel Warehouse Company

728-40 N. 15th Street

Pool Car Distribution and Forwarding.

Transfer. Storage. Railroad Siding.

Mark all shipments Lehigh Valley R. R. Delivery.

BETHLEHEM, PA.

ALLENTOWN, PA.

F. G. LAZARUS
20th Century Storage

Moving, Storing, Packing, Crating, Shipping
of Household Goods and Merchandise
Direct R. R. Siding Lehigh Valley.

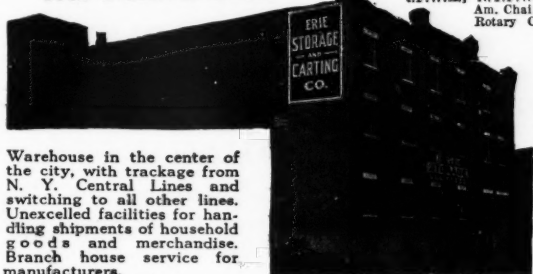
CHESTER, PA.

**Headley's
Express & Storage Co., Inc.**
General Storage
Merchandise and Household Goods
Moving, Packing and Shipping

ERIE, PA.

**ERIE
STORAGE & CARTING COMPANY**
1502 Sassafras Street

Members of A. W. A.,
I. F. W. A., N. Y. F. W. A.,
Am. Chain &
Rotary Club



Warehouse in the center of the city, with trackage from N. Y. Central Lines and switching to all other lines. Unexcelled facilities for handling shipments of household goods and merchandise. Branch house service for manufacturers.

ERIE, PA.

**ERIE
WAREHOUSE
COMPANY**

**MERCHANDISE
STORAGE DISTRIBUTION**

"a complete and efficient service"

PRIVATE TRUCKAGE MOTOR TRUCK FLEET

ERIE, PA.

**DISTRIBUTING—
DRY and COLD
STORAGE SPACE
FOR LEASING PRI-
VATE OFFICES.
INSURANCE 17c per
\$100.00.
PRIVATE SIDING
on N. Y. C.
REASONABLE
RATES
PROMPT SERVICE**

The Only Reinforced Concrete
Fireproof Warehouse in Erie



UNION STORAGE CO. ERIE, PA.

The Men Who Distribute

Mentholatum

Read **DISTRIBUTION & WAREHOUSING**
and consult the Shippers' Index

ERIE, PA.

LAKE AND RAIL



Our downtown warehouse is a modern building, fireproofed, commodious, and located in the heart of Erie's wholesale district, readily accessible to your local trade.

Our docks extend 1000 feet into one of the best harbors on the Great Lakes and have storage facilities for 800 carloads

These unexcelled facilities make Erie and the Fort Erie Warehouses the logical place and means for rapid, convenient, profitable distribution by discriminating shippers.

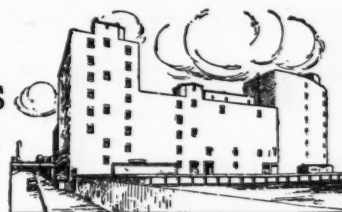
**Fort Erie Warehouses & Docks
Erie, Pa.**

J. M. Dunkle, Resident Manager

HARRISBURG, PA.

POOL CARS

Efficiently Handled



Merchandise and Household Goods Storage

HARRISBURG STORAGE CO.
P. R. R. Sidings. HARRISBURG, PA.

HARRISBURG, PA.

The Heart of Distribution



Carloads spotted at our doors are broken into LCL shipments via any steam line, without carting charges. There is a big saving for distributors in this feature. Trackage for twenty-four cars. Lowest insurance rates.

We are located at the very heart of one of the richest and most populous markets in the country. Get your goods into this market economically through our facilities.

**Keystone Warehouse
Harrisburg, Pa.**

Elmer C. Finkenbinder, Resident Manager

HARRISBURG, PA.

**MONTGOMERY & CO.
STORAGE WAREHOUSES**

Merchandise Storage—Transferring—Forwarding

Direct Track Facilities Pool Car Distribution
Members A.W.A. and American Chain of Warehouses

The Men who Distribute

"Jello"

Read **DISTRIBUTION & WAREHOUSING**
and consult the Shippers' Index.

JOHNSTOWN, PA.


I. D. REPLOGLE STORAGE CO.
 438 HORNER STREET

**Household Goods and
Merchandise Storage**

Pool Car Distribution. Private B. and O. R. R. Siding.
Complete Warehouse Service.

Members Penn. F.W.A. and N.F.W.A.

LANCASTER, PA.

S. S. BERTZ & CO., 226 West Lemon Street
STORAGE WAREHOUSE

General Merchandise Distribution

Pool Car Shipments

HOUSEHOLD GOODS STORAGE

Local and Long Distance Hauling—Direct Railroad Siding—Both
Pennsylvania R. R. and Philadelphia & Reading

CORRESPONDENCE SOLICITED

LANCASTER, PA.

Keystone Express & Storage Co.

STORAGE—DISTRIBUTORS—FORWARDERS

Merchandise and Household Goods

MANUFACTURERS' DISTRIBUTORS MOTOR SERVICE

Siding on P. R. R. and P. & R.

LANCASTER, PA.

Lancaster Storage Co.

Lancaster, Pa.

Merchandise Storage, Household Goods, Trans-
ferring, Forwarding

Manufacturer's Distributors, Carload Distribution
Local and Long Distance Moving
Railroad Sidings

NEW CASTLE, PA.

S. C. MOORE, Proprietor

Keystone Delivery Transfer & Storage
Packing, Crating, Storage and Shipping
of Household Goods

Merchandise distribution. Pool car shipments. Motor
trucks for light and heavy hauling and long distance moving.
Members N. F. W. A. Members Penna. Whse. Assoc.

NORRISTOWN, PA.

Fireproof Storage

Est. 1875

JAMES MCGINNIS CO.

201 E. La Fayette St.

Complete Warehouse Service—Moving, Packing, Shipping of
Household Goods and Merchandise. Also serving—Consho-
hocken, Pottstown, Phoenixville, Lansdale, Collegeville, Pa.
Send bill of lading to us.

OIL CITY, PA.

CARNAHAN
Transfer and Storage

The most reliable transfer in Venango County. Fireproof ware-
house. Private rooms for furniture and pianos. General hauling.
Overland hauling. Piano moving. Furniture packing a specialty.
Forwarding agents.

Members N. F. W. A.

PHILADELPHIA, PA.

PROPRIETARY MEDICINES—TOILET GOODS

A SPECIAL WAREHOUSING AND DISTRIBUTION SERVICE USED
BY SOME OF THE COUNTRY'S LARGEST MANUFACTURERS.

DAILY DELIVERIES MADE IN PHILADELPHIA AND CAMDEN.

POOL CAR DISTRIBUTION

THE REUBEN H. DONNELLEY CORPORATION

1206-1216 Race Street

Philadelphia, Pa.

PHILADELPHIA, PA.

**Let Us Store and Distri-
bute Your Merchandise**

Our well equipped PUBLIC STORAGE
WAREHOUSE is conveniently located,
containing 8 acres of floor space.

FOR RENT

Separate floors or buildings at extremely
low rentals.

P. R. R. Siding adjoins our
Buildings.

Phila. Belt Line Connections.

**FRANKLIN WAREHOUSING
COMPANY, Inc.**

Delaware Ave., Kenilworth, Penn, Swanson
& Bainbridge Sts.

Bell Phone, Lombard 59-66

Keystone Phone, Main 18-05

Represented by J. P. WARNER, Formerly of
INTERNATIONAL WAREHOUSING CO.

PHILADELPHIA, PA.

FIDELITY**Storage & Warehouse Company**

Special attention given to shipments from other warehouses.

Charges collected and remitted promptly.

1809-11-13 Market St., Phila., Pa.

Members: N. F. W. A. and A. W. A.

PHILADELPHIA, PA.

ESTABLISHED 1855

Phone Lombard 25-71

Godley's Storage Warehouses

714 S. Swanson Street (Cor. Kenilworth St.)

Philadelphia, Pa.

**STORAGE FOR FREE AND U. S. CUSTOMS
BONDED MERCHANDISE**



Track connections
Pennsylvania Railroad
Philadelphia & Reading Railroad

Mdse. Distribution. Pool Cars.

PHILADELPHIA, PA.

HARVEY J. LUTZ

MILTON A. HILDENBRAND

HILDENBRAND BROS.

STORAGE, PACKING, MOVING

Broad and Cumberland Streets, Philadelphia, Pa.

Large fleet of Packard motor vans.

PHILADELPHIA, PA.

LOEB SERVICE

in Philadelphia

American Warehouse and Distributing Co.

Delaware Ave., Swanson and Queen Sts.
Private Siding P. R. R. and Belt Line to all R. R.

Loeb Cold Storage and Warehouse Co.

1224-6-8 Frankford Ave.
Fireproof Any temperature

H. Loeb & Son, 33rd and Master Sts.

Private Siding Phila. & Reading R. R.
Motor Truck Delivery Service

The Men Who Distribute
Winchester Arms and Ammunition
Read **DISTRIBUTION & WAREHOUSING**
and consult the Shippers' Index

PHILADELPHIA, PA.

For Sale

**Large group of warehouses
situate in**

**heart of shipping district
in Philadelphia.**

**Purchaser can take over
warehousing business
now in existence.**

MARTIN SILVERT, Esq.,

**306 Bulletin Building
Philadelphia, Pa.**

PHILADELPHIA, PA.

**MILLER NORTH BROAD
STORAGE COMPANY**

MOVING, STORAGE, PACKING, SHIPPING

Four large convenient Warehouses. Fleet of thirty large and small motor trucks. Storage space for household goods, merchandise and automobiles. Private Siding Penna. R. R. (Angora Station). Distribution of Pool Car Shipments.

Main Office: **BROAD ABOVE LEHIGH AVENUE
PHILADELPHIA, PENNSYLVANIA**

Members: N. F. W. A. and A. W. A.

PHILADELPHIA, PA.

**Philadelphia
LOCAL BUSINESS**

1004-1026 Spring Garden Street

Manufacturing Distributors

Philadelphia, Germantown, Chestnut Hill,
Camden, N. J., Frankford

PHILADELPHIA, PA.

9 Warehouses 27 Acres of Floor Space Sea and Rail
Trackage Facilities for 48 Cars Reading R. R. Penn. R. R.



LOCATION—On river front—Heart of jobbing district—Adjacent to navigation lines—Surrounding streets, wide and well paved, eliminate vehicular congestion.

EQUIPMENT—Thoroughly modern—Low insurance—High speed elevators—Ample delivery platforms—Fleet of motor trucks—Completely equipped pool car department.

FACILITIES—Direct track connection with Penn. R. R. and Reading R. R. permitting daily ferry or trap car service—No cartage expense on L. C. L. shipments. **PERSONNEL**—Trained to intelligently handle all merchandise.

TERMINAL WAREHOUSE COMPANY

Delaware Ave. and Fairmount

Members—A. W. A., Distribution Service, Inc., N. F. W. A., Pa. F. W. A.

REPRESENTED BY
DISTRIBUTION SERVICE, INC.

100 BROAD ST., NEW YORK CITY
Phone B.G. 8100

427 W. ERIE ST., CHICAGO
Phone Sup. 7180

624 THIRD ST., SAN FRANCISCO
Phone Sutter 3481

An Association of Good Warehouses Located at Strategic Distribution Centers

PHILADELPHIA, PA.

Wm. Roumel, Jr., Pres. and Genl. Manager

South Jersey Warehouse Company

1300 Pine St., Camden, N. J.

Warehouse No. 1 1300 Pine Street

Warehouse No. 2 West Jersey R. R. and Jackson St.

Warehouse No. 3 1300 Pine Street

General Merchandise Only

Warehouse Receipts Issued

Direct Penn. R. R. Siding

Pool Car Distribution

Motor truck service for Philadelphia and South Jersey deliveries

PHILADELPHIA, PA.

Established 1903



MANUFACTURERS'
DISTRIBUTORS

Direct delivery service throughout Philadelphia
and Camden :: :: Correspondence solicited

Address

Office—5th and Byron Streets
CAMDEN, N. J.

The Men Who Distribute

H. O. Cereal

Read DISTRIBUTION & WAREHOUSING
and consult the Shippers' Index

PHILADELPHIA, PA.

Household Effects



Fireproof Warehouse

"A Service as Good as Its Reputation"

20th CENTURY STORAGE WAREHOUSE CO.

3120 MARKET STREET

(Member—N. F. W. A. and P. F. W. A.)

PITTSBURGH, PA.

BELMAR

MOVING & STORAGE CO.

MAIN OFFICE AND WAREHOUSE

739-741-743 Penn Ave.

Wilksburg, Pa.

Branch Office and Warehouse

Homewood Ave. and P. R. R., Pittsburgh, Pa.

Member National Furniture Warehousemen's Association
Member Pennsylvania Furniture Warehousemen's Association

Your patronage solicited and reciprocated.

PITTSBURGH, PA.

IN
PITTSBURGH
IT'S
BLANCK'S
TRANSFER & STORAGE CO.

SINCE 1880

MOVING—PACKING—STORAGE
BAGGAGE AND FREIGHT DELIVERY

FIREPROOF WAREHOUSE

REAL SERVICE

PITTSBURGH, PA.

DONALDSON
Transfer and Storage Company
FIREPROOF
FURNITURE WAREHOUSE
100,000 square feet.

Consign Pittsburgh Shipments to Us.

1012 to 1018 Western Avenue

Established 1865

Member A. W. A.

PITTSBURGH, PA.

Duquesne's Offer:
Certain Satisfaction

To the firm selling to wholesalers and retailers we offer quick distribution to two million consumers. Large consignments reach us at carload rates and are reshipped L. C. L. without need for or expense of trucking. One hundred cars is our track capacity; eight five-ton elevators and a careful, experienced crew of handlers assure despatch and safety.

Duquesne Warehouse Co.
Pittsburg, Pa.

H. A. Bietendeufel, Superintendent.



PITTSBURGH, PA.

Hasley Brothers Transfer & Storage

Office: 939 So. Canal St.

Warehouses: 918-928 Uneeda Street

Movers, packers, shippers of H. H. goods.

Fire proof and fire protected (sprinkled) warehouses.

Established 1878

PITTSBURGH, PA.

**SERVICE TO THE
CORRESPONDENT**



CONSISTS in giving the correspondence of those we represent prompt acknowledgment, safeguarding their interests, mailing checks in settlement of accounts, and furnishing final reports of transactions.



THIS service also includes an element of importance:—the handling of shipments upon arrival in a manner conducive to joint customer's approval, whose future business we are always eager to secure.



Ship via Pennsylvania to East Liberty Station (Pittsburgh, Pa.)

Established 1889

HAUGH & KEENAN
STORAGE AND TRANSFER CO.
CENTRE AND EUCLID AVENUES

PITTSBURGH, PA.

MURDOCH

STORAGE & TRANSFER COMPANY

General Office and Warehouses

546 NEVILLE STREET
PITTSBURGH, PA.

Branch Warehouse, Wilksburg, Pa.

Murdoch Means Service

PITTSBURGH, PA.

Established 1910

PITTSBURGH DISTRIBUTING CO.

POOL CARS DISTRIBUTED
AND RESHIPED L. C. L.
PITTSBURGH, PA.

620 Empire Building

Tel. 1574 Smithfield

The Men Who Distribute

Root Beer Supplies

Read DISTRIBUTION & WAREHOUSING
and consult the Shippers' Index

The Men Who Distribute

Weed Chains

Read DISTRIBUTION & WAREHOUSING
and consult the Shippers' Index

PITTSBURGH, PA.

SHANAHAN**Transfer and Storage Co.**

Consign Pittsburgh Shipments
All Fireproof Warehouses

5th Ave. at McKee Place
7535 Penn Avenue
Established 1865

SCRANTON, PA.

Members N. F. W. A.—P. F. W. A.

R. F. POST

Motor
Trucks

Household
Goods



Merchandise
Storage

Pool Car
Distribution

DRAYMAN AND STORAGE WAREHOUSE
Lackawanna R.R. Siding Direct

READING, PA.

Columbian Warehouse Company

Storage, New Merchandise Exclusively.
Modern Building, Lowest Insurance Rates.
S. W. Cor. 5th & Laurel Sts.

WILKES-BARRE, PA.

WILKES-BARRE WAREHOUSING CO.

General Storage and Distribution

Prompt and Efficient Service
Milling-in-Transit and Pool Cars

19-35 New Bennett St.

Wilkes-Barre, Pa.

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Established 1894.
"He Profits Most Who Serves Best" (Rotary)

The Quackenbush Warehouse Co.

Incorporated

Shipping. Storing, Packing, Carting.
R.R. Siding. Manufacturers' Distributors.
Correspondence Solicited
Members A. W. A. and A. C. W.
Scranton, Pa.

Storage in transit privilege accorded.

WILLIAMSPORT, PA.

The Williamsport Storage Co., Inc.

GENERAL MERCHANDISE STORAGE

Pool Car Distribution and Forwarding

Prompt and Efficient Service

Members A. W. A. and P. W. A.
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TERMINAL WAREHOUSE CO. OF RHODE ISLAND, Inc.

Allen Avenue, Foot of Oxford Street on Providence River
PROVIDENCE, RHODE ISLAND, U. S. A.

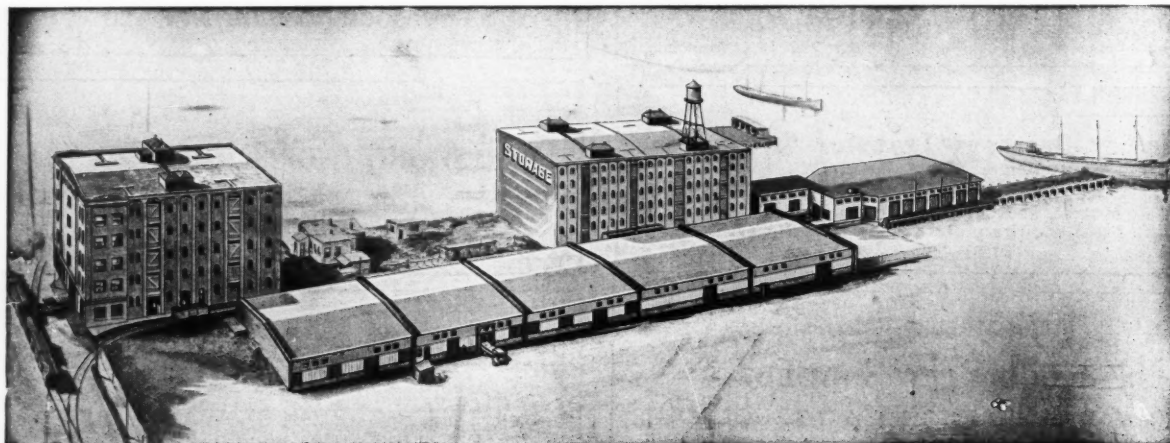
The most modern Storage Warehouses in New England, with side track capacity for 75 cars—Also several acres of yard storage

Our Location center of the Manufacturing Industries of New England. Deliveries either by Rail or Motor Trucks from our location to most any point in New England. Lowest Insurance Rates. Direct Track Connection N. Y., N. H. & H. R. R. Shipping Directions, South Providence, Rhode Island. Good Depth of Water. Weighing, Sampling and Shipping by Experts permanently employed.

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Rhode Island's Only Fireproof Warehouse

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Merrill & Federal Streets, Providence, R. I.

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**STRAHON TRANSFER
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Distribution Private Trackage
Pool Cars a Specialty
Bonded Warehouse
35,000 sq. ft.
Motor Truck and Team Service

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CADY MOVING & STORAGE CO.STORAGE WAREHOUSES
Household Furniture and Pianos
Packing, Crating and Shipping.
62 to 70 Dudley Street.

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**THE CHATTANOOGA
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Fireproof Warehouse

Furniture Merchandise

Packed Stored Shipped

Heavy Hauling

Motor and Horse Drawn Equipment

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**Estate of Orrin E. Jones
Fireproof Storage**

Experts in Handling Household Goods

Office, 59 Central St., Providence, R. I.

Storage, Packing, Moving, Shipping

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**Charleston
Warehouse and Forwarding Co.**Merchandise Storage and
Distribution of Pool CarsModern Concrete Warehouse
100,000 Square Feet of Storage Space
Private Tracks Connecting with
All Railroad and Steamship Lines
Motor Truck ServiceMembers of the American Chain of Ware-
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CHATTANOOGA

Warehouse & Cold Storage Company

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MEMBERS: A. W. A. and AMERICAN CHAIN

Cold and General Storage

GENERAL MERCHANDISE AND HOUSEHOLD GOODS
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Special Attention Given to Pool Car Distribution.

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CRABTREE**TRANSFER & STORAGE COMPANY, Inc.**

Distributors and forwarders of pool cars

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Sprinkler system warehouse. Lowest insurance rates.

GREENVILLE, S. C.

GREENVILLE, S. C.Storage, Distributing, Moving, Service
that satisfies**SMITH DRAY LINE**

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General Merchandise—Pool Car Shipments

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Where the West Was

ABERDEEN STORAGE COMPANYStorage and Distribution of Merchandise and
Household Goods

Pool Cars Promptly Handled

C. M. & St. P. Trackage

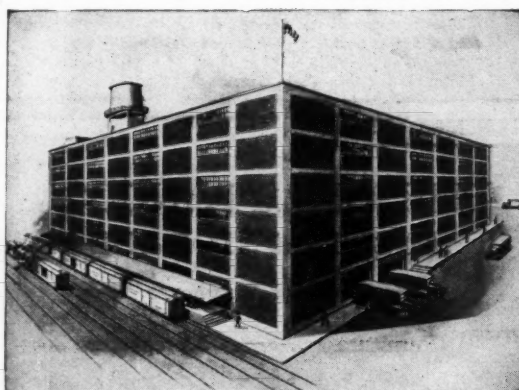
Trucks and Teams

The Men Who Distribute

Dennison Paper ProductsRead DISTRIBUTION & WAREHOUSING
and consult the Shippers' Index**Pick Your
Consignee**from the companies listed in this sec-
tion—they are the "live wires" of the
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promptly and efficiently.It is also worth your while
to earn their reciprocity.

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Knoxville Fireproof Storage Company
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Only Fireproof Warehouse in Knoxville

135,000 square feet on
Southern Railway tracks.
Equipped with Automatic Sprinkler.

Insurance at 12c. per \$100.00
per annum.
Pool Cars distributed.

Household goods shipments
solicited. Prompt remittances
made.

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American Warehousemen's Ass'n
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PROMPT AND EFFICIENT SERVICE

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Forwarding and Distributing Agents
Household Goods and Piano Moving
Long Distance Hauling, anywhere, any time

Fully equipped for
Distribution of Pool Cars

Rowe Transfer & Coal Co.

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Memphis' Most Careful Movers

Move
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Household
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Two Warehouses—Private Siding

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The South's most centrally located
Distributing Center

The Home of the World's Largest Cotton
Warehouses—operating departments
for the

STORAGE
of
General Merchandise
Automobiles
and
POOL CAR DISTRIBUTION

Lowest Rates—Insurance

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All on ground floor.
Automatically sprinkled.
Finest fire alarm system.
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An Organization of Experienced Operatives,
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Established 1856. Sprinkler System.
Lowest Insurance Rate in the City.
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Pool Cars Distributed.

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STORAGE WAREHOUSES
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671 to 679 South Main St., on Illinois Central Railroad Tracks

CAPACITY 1000 CARS

Free Delivery from All Railroads on Car Lots
Insurance Rate 25-100 of One Per Cent or \$2.50 Per \$1000.00 Per Annum.

No Charge for Switching To All Railroads on Car Lots for Competitive Points and Illinois Central Railroad Local Stations.

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MEMPHIS, TENN.**

MEMPHIS, TENN.

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YOU ARE LOOKING FOR A Warehouse That Believes in
"SERVICE FIRST" Then Get in Touch Today With
ROSE WAREHOUSE COMPANY, Memphis, Tenn.

LIGHT, CLEAN STORAGE
LOW RATE OF INSURANCE
FREE SWITCHING SERVICE
IN THE HEART OF THE
FREIGHT TERMINAL
AND JOBBING DISTRICT.

NASHVILLE, TENN.

NASHVILLE

Central shipping point for all parts of
Tennessee, Southern Kentucky, North-
ern Alabama, Mississippi and Georgia.

BOND

Reshipping and city deliveries from pool cars
or warehouse stock. Free switching from all
roads. Low insurance. Expert men will at-
tend to your business promptly and carefully.
Will be glad to refer you to many large and
well known companies we are now serving.

E. M. Bond Fireproof Storage Co.

Members of American Warehousemen's Association, National
Furniture Warehousemen's Association, Southern Warehouse-
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R. L. Daniel Storage Co.

Box 487, 1706 Texas, 2813 Durazno Sts.

Our hobby is the crating, packing, shipping and storing of
household goods. Consign your goods to us for proper attention.
Member, National Furniture Warehousemen's Assn.

EL PASO, TEXAS

INTERNATIONAL WAREHOUSE CO.

INC., \$200,000

FIREPROOF—BONDED

Members: N. F. W. A.—Tex. W. & T. Ass'n.

Storage, Drayage, Packing, Distribution
Merchandise and Household Goods

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**In Fort Worth
It's Binyon-O'Keefe**

With three warehouses having a total of 250,000 square
feet of floor space; with our private side and free
switching to Fort Worth's eleven Trunk Line Rail-
roads—in Fort Worth, Binyon-O'Keefe is best pre-
pared to serve you.



BINYON-O'KEEFE
Fireproof Storage Co.
Fort Worth



Associated with Distribution Service, Inc.

GALVESTON, TEXAS

The WILEY & NICHOLLS CO.

GALVESTON, TEXAS

**TRANSFER AND FIRE-PROOF
WAREHOUSES**

Pool Car Distributors

Forwarders

GALVESTON, TEXAS

Universal Terminal Warehouse Company

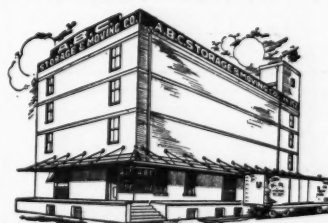
Fire-proof storage—Sprinklered Warehouses

Galveston, Texas

Houston, Texas

New York Office:
40 Rector Street

HOUSTON, TEXAS

**A·B·C. STORAGE AND
MOVING CO., Inc.**


**Right in the
Center
of Houston**

**Ideal for the
DISTRIBUTION
of
MERCHANDISE
and
HOUSEHOLD
GOODS**

"It's Fireproof"

Houston, Texas

Edw. T. Keough, Gen. Mgr.

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ONE OF SOUTHWEST'S LARGEST MODERN
FIREPROOF BONDED WAREHOUSES*Facilities for handling all kinds of Mer-
chandise with accuracy and promptness.***NATIONAL** Warehouse and
Distributing Co.KOPPEL AND WASCHER, Propr's
P. O. Box 1754 Houston, Tex.Warehouses contain 72,500 sq. ft. space. Brick con-
struction. Sprinkler system assures you a lower rate
of insurance.

HOUSTON, TEXAS

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Successors to

Binyon O'Keefe Fireproof Storage Co.



Pool Cars Distributed

MERCHANDISE STORAGE
FIREPROOF WAREHOUSE**SERVICE THAT COUNTS**

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Fireproof storage—Sprinklered Warehouses

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New York Office: 40 Rector Street

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Wald Transfer and Storage Co.

Bonded Fireproof Warehouse

Merchandise and Household Goods Storage.

Pool Cars Distributed.

Rail Facilities 10 Cars.

Dry Cold Storage Plant in Connection.

H. B. & T Railroad and 812 Live Oak St.

HOUSTON, TEXAS

The Men Who Distribute

Premier Brand GroceriesRead DISTRIBUTION & WAREHOUSING
and consult the Shippers' Index

HOUSTON, TEXAS

IN
HOUSTON**WESTHEIMER'S**FOR HOUSEHOLD GOODS AND
MERCANTILE STORAGE
DISTRIBUTIONFIREPROOF WAREHOUSES
RAIL FACILITIES—20 CARS
ELECTRIC CRANE
YARD STORAGE

Investment—\$300,000.00

References

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All Local Banks
And Best of All
Forty Years in Houston**WESTHEIMER WAREHOUSE COMPANY**
HOUSTON, TEXAS

SAN ANTONIO, TEXAS

Territory—Southwest Texas and Mexico

MERCHANTS TRANSFER COMPANYBANKERS of MERCHANDISE
Warehousing and DistributionHousehold Goods—General Storage—Pool Cars
Branch House Facilities—Bonded

SAN ANTONIO, TEXAS

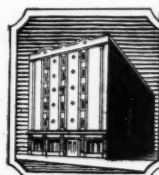
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Give us a chance to demonstrate our service.

Reference Any Bank in San Antonio.

Bonded, Fireproof, Reliable, Dependable Service.

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**General Warehousing
and Distribution**CAPACITY
1,250,000 CU. FT.

THE HOUSE OF SECURITY. Member four leading associations!

Write for
freight tariff
to all points in
San Antonio
territory**SCOBEE**
FIREPROOF
STORAGE

San Antonio, Texas

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HUNTER TRANSFER CO.
TEXARKANA, ARK.

Established 1882
DISTRIBUTOR OF
POOL CARS STORAGE
TRUCKING MOVING

PETERSBURG, VA.

Southern Bonded Warehouse Corp.

Merchandise and Household Goods
DISTRIBUTION—STORAGE—TRANSFER

A. C. L. PRIVATE SIDING
Members: A. W. A.—N. F. W. A.—A. C. W.

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Tyler Warehouse and Storage Company
Bonded under the Laws of Texas

General Storage and Distribution from the Center of East Texas. Specializing in Pool Cars Merchandise.

RICHMOND, VA

Virginia Bonded Warehouse Corporation

1707 East Cary Street

Distribution and Forwarding of General Merchandise Only
Largest Warehouses in South Southern R. R. Siding
175,000 sq. ft. Insurance Rate 25c. per \$100 per year
Members American Warehousemen Association

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ELKIN TRANSFER & STORAGE CO.

Wichita Falls, Texas

Located in the heart of the oil industry. Logical distributing center for North Texas. Trackage warehouse for merchandise and household goods; free switching service.

We specialize in pool car distribution

MEMBERS { Texas W. & T. Ass'n
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SEATTLE, WASH.

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MOVING and STORAGE

Vancouver, B. C. Seattle, Wn. Portland, Ore.

SALT LAKE CITY, UTAH

Merchandise Storage and Distribution

Over 1,000,000 Cubic Feet Re-enforced Concrete,
Sprinklered Space

Insurance Rate Only 18 Cents

Jennings-Cornwall Warehouse Co.

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Armour Cereals

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and consult the Shippers' Index

NORFOLK, VA.

**Free MERCHANDISE STORAGE Bonded
DISTRIBUTION and FORWARDING**

Direct rail connections with all roads entering Norfolk
Trap car service Storage in transit Pool car distribution

150 package cars leave Norfolk daily for surrounding territory

Dry sprinkler system throughout
Low insurance rates

2,000 feet of wharfage
Deep water slips

Within one mile of jobbing and wholesale districts
Collections promptly made and remitted

A spot stock in Norfolk receives more economical and efficient distribution to
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An Association of Good Warehouses Located at Strategic Distribution Centers



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EYRES STORAGE and DISTRIBUTING CO.

Established 1889
Incorporated 1904
Free & Bonded

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GENERAL MERCHANDISE STORAGE
MACHINERY STORAGE
HOUSEHOLD GOODS STORAGE
POOL CAR DISTRIBUTIONS
OPERATING 26 TEAMS, 42 AUTOS
SERVICE OUR MOTTO



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**UNITED WAREHOUSE CO.
SEATTLE, WASH.**

Established 1895
Incorporated 1900

GENERAL STORAGE AND DISTRIBUTING
U. S. CUSTOMS BONDED STORAGE
RAIL CONNECTION WITH ALL ROADS

SPOKANE, WASH.

Furniture
Moved
Packed
Shipped
Stored
Pool Cars
Distributed and
Consolidated

**CATER
TRANSFER
&
STORAGE
CO.**

Exclusive
Motor Service
Merchandise
Storage
L. C. L. & C. L.
Distribution
Private Spur
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Ins. Rate 84c

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WE OWN BOTH WAREHOUSES
Established 22 years in Tacoma—and know how to handle your requirements
Storage (bonded and free) Merchandise and H. H. Goods
Moving and Packing by Experts C. L. & L. C. L. Distribution
Collections Remitted Promptly We Solicit Your Business
CORNER PACIFIC AVE. AND 19th.

TACOMA, WASH.

Pacific**Storage & Transfer Co.**

Warehousemen
Merchandise and Furniture
Distributors and Forwarders



Our Motto Is
SERVICE
Speed—Accuracy—Satisfaction

Ship Your Pool Cars in Our Care



YAKIMA, WASH.

Miller-Callison Storage & Transfer Co.

DISTRIBUTORS and FORWARDERS, PACKERS, SHIPPERS and MOVERS
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Motor Trucks and Team Equipment for All and Every Kind of Hauling.
SHIP IN OUR CARE and let us be "At your service with best of service."

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AUTOMOBILE AND TRUCK STORAGE

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Associated
With A National Group
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Represented By
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Established
1905

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Warehouse and Transfer Co., Inc.
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Warehouseman Distributors and Forwarders

of

Merchandise, Machinery
Furniture and Household Goods

Consign Your Cars to Us and Receive a
High Class Service at a Minimum Cost

Lowest Insurance Rates in the City

HUNTINGTON, W. VA.

Shipping Center for Southern West Virginia, Southern Ohio and Eastern Kentucky

With five railroads entering Huntington or nearby and the Ohio River accessible, shipping to a large and thickly populated territory is a matter of a few hours. Private siding, no switching charges, every modern convenience supported by exceptionally high class service at a cost surprisingly low. Huntington is the gateway to a large and fertile field.

MAIER SALES AND STORAGE CO.
1639-41-43-45 Seventh Ave.
Huntington West Virginia

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La Crosse Terminal Warehouse Company

Storage and Forwarding
Household Goods and Merchandise
Trackage Connection with All Railroads

A Warehouse modern equipped in every respect rendering service of the better kind—always up-to-the-minute.

Phone 492 La Crosse, Wis.

M. A. Smith, Mgr.

MILWAUKEE, WIS.

HANSEN STORAGE COMPANY

Capital \$1,000,000.00

MILWAUKEE, WISCONSIN

WE CAN SOLVE YOUR PROBLEMS IN STORAGE
AND DISTRIBUTION OF MERCHANDISE

15 WAREHOUSES—50-CAR SIDE TRACK
850-FOOT DOCK

Member—American Chain of Warehouses,
American Warehousemen's Association,
Central Warehousemen's Club.

MILWAUKEE, WIS.

For the Greatest Satisfaction

To both yourselves and your customers
consign your Milwaukee shipments to

United Fire Proof Warehouse Co.

392 Prospect Ave., Milwaukee, Wis.



Good service
built this
new fire proof
warehouse.

OSHKOSH, WIS.

Oshkosh Storage Company

General Storage—Re-Consigning
Distributing—Forwarding
Prompt and Efficient Service
Private Siding—Free Switching

Oshkosh is the Metropolis of the Fox River Valley
and the best distributing point in Wisconsin.

We solicit your valued shipments which will receive
our prompt and careful attention.

Members: American Warehousemen's Association
Nat'l Furniture Warehousemen's Ass'n

MILWAUKEE, WIS.

LINCOLN FIREPROOF WAREHOUSE CO.

322-332 Third Street, Milwaukee, Wis.

Direct Trackage into Warehouse. Carlot Distribution.
City and Interurban Delivery of Mdse. and Household
Goods. We remit upon receipt of bill of lading.

SUPERIOR, WIS.

HART TRANSFER & STORAGE COMPANY

PACKING, STORAGE, SHIPPING

Largest Padded Vans in the City

Private Switch—No Switching Charge

Freight, baggage and express transfer. Furniture packing and moving. Light
and heavy hauling, private locked rooms, heated piano and painting rooms.
Advanced charges remitted instantly. Reciprocity at every opportunity.

POOL CARS DISTRIBUTED

1716 BROADWAY

The Men Who Distribute

McDougall Kitchen Cabinets

Read DISTRIBUTION & WAREHOUSING
and consult the Shippers' Index

The Men Who Distribute

Cudahy Products

Read DISTRIBUTION & WAREHOUSING
and consult the Shippers' Index

HAMILTON, CAN.

CENTRAL DISTRIBUTING POINT.

HAMILTON

THE GATEWAY TO CANADA

Store and Distribute through
The Glasgow Storage & Cartage Co.
 (Established 1887)
 (In the Heart of the Wholesale District)
 LICENSED CUSTOMS BROKERS AND FORWARDERS

HAMILTON, CANADA

A Fireproof Merchandise Warehouse, centrally located on private siding.
 Seventeen years in business and our original customers are still storing with us.

STORAGE & TRANSFER CO., Ltd.
 HAMILTON, CANADA

MONTREAL, CANADA

"JE GARDE"
("I Safeguard")

J. B. Baillargeon Express, Ltd.,
 of Montreal, Canada

One of the largest and most progressive Transfer Companies in the Dominion.

During the past twenty-five years a good part of our business has come from big American shippers. They have found this organization extremely capable and efficient.

There are many American concerns, however, who have not discovered our great capacity for service nor the broad scope of our activities.

To those who do not know us we would like to send our illustrated catalog "25 Years of Constant Progress." This catalog will prove exceptionally valuable to you in the matter of routing your Montreal and Canadian consignments.

It contains a wealth of profitable information. Send for this catalog today. It will be mailed immediately.

J. B. Baillargeon Express, Ltd.
 Ontario Street East, Montreal, Canada
Correspondents all over the World

The Men Who Distribute
Dr. Miles Medicines
 Read DISTRIBUTION & WAREHOUSING
 and consult the Shippers' Index

MONTREAL, CAN.

General Forwarders

Our modern facilities for the storing and forwarding of merchandise guarantees you a type of service that insures Safety and Economy. Our 60,000 feet of floor space is sprinklered throughout. Rush deliveries a specialty. We solicit POOL CAR shipments.

Ship to "GIFFORD"

The GIFFORD WAREHOUSE CO.
 MONTREAL

Members A. W. A., C. W. A.

TORONTO, ONT., CAN.

Store with "City Storage"

Our 25 years experience in the transfer of household goods has given us an enviable position in this field of service.

Special attention given POOL CAR shipments, Storage and Distribution of General Merchandise.

CITY STORAGE, Ltd.
 253 College St.

N. F. W. A.

TORONTO, CANADA

SPRINKLER
 PROTECTED

INSURANCE
 RATE 45c.



GENERAL MERCHANDISE DISTRIBUTORS
 AND WAREHOUSEMEN

**STANDARD WAREHOUSING
 & MERCANTILE CO., LIMITED**

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L. J. Myers, Mgr.

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2 Fireproof Warehouses

Private siding. Fleet of Motor Trucks, household goods pool car distribution. Moving—Storing—Packing—Shipping.

Est. 1908

C. A. WARD, Ltd.
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B E K I N S
MOVING and STORAGE

Seattle, Wn. Portland, Ore. Vancouver, B. C.

WINNIPEG, CAN.

INSURANCE 30 CENTS



230 PRINCESS ST. WINNIPEG

HONOLULU, HAWAII

When Shipping Goods to

HONOLULU

consign to us and the same will be given our best attention. Modern Concrete Warehouses. Collections promptly remitted. Correspondence solicited.

CITY TRANSFER COMPANY

Cable Address:
LOVERINO, HONOLULU

Seven Out of Ten Use the Shippers' Index

PRINTERS' INK, a publication for publishers and advertisers, recently printed a list of the companies in the United States who spend the most money for advertising. This list was made up, quite naturally, of most of the country's largest distributors of merchandise. In it there were soap manufacturers, sugar refiners, soup canners, large cereal makers and companies engaged in the manufacture and distribution of many other products.

Seven out of the first ten of these companies, including the first, second and third, have traffic and distribution managers who are regular readers of **DISTRIBUTION & WAREHOUSING** and who consult the Shippers' Index for information regarding warehouses through which to distribute their products.

The warehouseman with facilities and capacity for rendering the kind of service which these manufacturers require, by being represented regularly in the Shippers' Index, keeps these facts and his name and location constantly before those who can use his services to his profit and to their own advantage.

*The Warehouseman who advertises
his ability to serve is deserving of
the Shipper's first consideration*

The Meeting Place of Shippers and Warehousemen

ONE of the largest national distributors, manufacturing a product known the world over, has announced that hereafter it will distribute exclusively through warehouses. In the selection of the warehouses to be used, **DISTRIBUTION & WAREHOUSING** has had an important part. This distributor, like hundreds of others of similar calibre, is a regular reader of **DISTRIBUTION & WAREHOUSING** and uses the Shippers' Index as a guide and source of information in the selection of the warehousemen with which to do business.

*The Shippers' Index of **DISTRIBUTION & WAREHOUSING** is the meeting place of the man who needs warehouse facilities and the man who has them to offer.*

BIG 4 TRANSFER CO., Inc.

**Long Distance Moving
Exclusively**

Representatives Everywhere

Montgomery Elevator Co.

Passenger and Freight Elevators

*Specialists in
heavy duty freight
elevators for
Warehouse Service.*

MOLINE, ILLINOIS

FISK TIRES

*There's a Fisk Tire of extra
value in every size, for car,
truck or speed wagon*

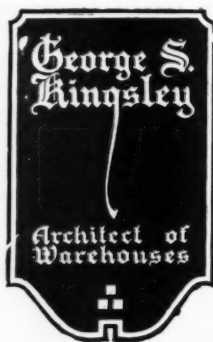
Excelsior Wrapper Co.

MANUFACTURERS OF

**EXCELSIOR PACKING PADS
BALED EXCELSIOR
WOOD WOOL**

CHICAGO OFFICE: 224 W. KINZIE ST.

FACTORIES: Sheboygan, Wis.; Grand Rapids, Mich.
Metropolitan District Served by
Boston Excelsior Co., 580 W. 29th St., New York City



Your New Warehouse

Twenty-nine years of specialization in designing, construction and personal supervision of warehouse building.

Some clients have eight units all Kingsley built.

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VULCAN "ALL-STEEL" FIRE DOORS

Universally Used
in All Modern
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Warehouses
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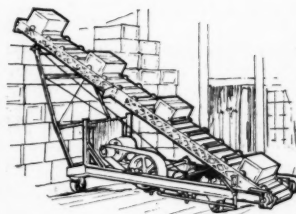
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Stencil Board, Stencil Inks,
Fountain Brushes, Marking Pots.
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INDEX TO GENERAL ADVERTISERS

The Advertisers' Index is published as a convenience, and not as a part of the advertising contract. Every care will be taken to index correctly. No allowance will be made for errors or failure to insert.

A	
Arco Vacuum Corp.	66
Autocar Co.	53
B	
Big Four Transfer Co.	140
Breen, W. H.	140
C	
Cass & Johansing	55
Classified Advertising	141
D	
Donnelly, Son & Putnam	143
Dupre Manufacturing Co.	141
E	
Excelsior Wrapper Co.	140
F	
Federal Motor Truck Co.	Front Cover
Fisk Tire Co., Inc.	140
Ford Motor Co.	57
Fulton Bag & Cotton Mills	144
G	
General Motors Truck Co.	67
Graham Bros.	2
Greene, Van Rensselaer H.	69
I	
International Harvester Co.	61
J	
Judson Freight Forwarding Co.	3
K	
Kelly-Springfield Tire Co.	4
Kingsley, Geo. S.	140
L	
Louisville Bedding Co.	Third Cover
M	
Mathews Conveyor Co.	140
Montgomery Elevator Co.	140
Moore & Dunford, Inc.	70
Multistamp Co.	69
N	
National Terminals Corp.	Second Cover
Neal Handy Saw Co.	144
O	
Onan & Son, D. W.	141
Otis Elevator Co.	63
P	
Peelle Co.	4B
R	
Reach Textile Co., A. L.	144
Republic Motor Truck Co.	Back Cover
Richard Wilcox	65
Royal Bedding Co.	142
S	
Self-Lifting Piano Truck Co.	145
Selle & Co., H. W.	144
Star Quilt Mfg. Co.	145
T	
Trans-Continental Freight Co.	1
U	
United Motors Products	4A
United Vacuum Appliance Corp.	142
V	
Vulcan Rail & Construction Co.	140
W	
Walker Vehicle Co.	59
Warford Corp.	146
White Co.	6
White Tar Co.	143

(For Shippers Index Advertisers, see pages 143, 144 and 145)

SHIPPERS INDEX

(For Index to General Advertisers, see page 142)
The Advertisers' Index is published as a convenience, and not as a part of the advertising contract. Every care will be taken to index correctly. No allowance will be made for errors or failure to insert.

A	
A B C Fireproof Warehouse.....	103
A B C Storage & Moving Co.....	133
Aberdeen Storage Co.....	131
Alabama Motor Transfer Co.....	72
Albany Terminal & Security Whse. Co., Inc.....	109
American Brokerage & Whse. Co.....	118
Amick Transfer & Stge. Co.....	77
Anchor Warehouse Co.....	109
Arizona Stge. & Distributing Co.....	72
Arlington Storage Whse.....	94
Arrow Fireproof Storage & Mov- ing Co.....	103
Auburn Draying Co.....	109
Audubon Fireproof Storage Ware- houses.....	112
Augusta Bonded Public Whse. Co.....	80
B	
B. R. & P. Warehouse, Inc.....	114
Baer Fireproof Whse. Co.....	81
Baggage & Omnibus Trans. Co.....	124
Ballargeon Express, Ltd.....	138
Ballard Ppf. Stge. & Trans. Co.....	101
Baltimore Storage Co.....	93
Bankers Warehouse Corp.....	102
Bartlett Storage Warehouse.....	86
Beaufort County Storage Ware- house Co.....	118
Beecraft Transfer & Storage Co.....	88
Beeler Transfer & Storage Co.....	85
Becker Household Shipping Co.....	81
Bekins Moving & Storage (Can.).....	139
Bekins Moving & Stge. (Wash.).....	135
Bekins Moving Storage (Ore.).....	124
Bekins Omaha Van & Storage Co.....	104
Bekins Van & Stge. Co. (Iowa).....	90
Bekins Van & Stge. Co. (Fresno).....	73
Bekins Van & Stge. Co. (Los An- geles).....	73
Bekins Van & Stge. Co. (Oak- land).....	75
Bekins Van & Stge. Co. (San Francisco).....	76
Belmar Moving & Storage Co.....	128
Berthelsen Transfer & Storage.....	90
Berta & Co., S. S.....	129
Bill Bros. Co., S. S.....	78
Bimberg Sons, Joseph.....	111
Binyon-O'Keefe Fireproof Stge. Co.....	133
Blackham Stge. & Trucking Co. Inc.....	112
Blakelee Co., Ralph N.....	79
Blanchard Storage Co.....	116
Blanch's Trans. & Stge. Co.....	129
Bond Ppf. Stge. Co., E. M.....	133
Borley Storage & Transfer Co.....	104
Boulton's Storage.....	139
Bowker, Inc., Geo. A.....	96
Bowler Storage & Sales Co.....	96
Boyd Transfer & Storage Co.....	100
Boys Transfer & Storage Co.....	73
Brady & Son Co., P.....	112
Bridgport Storage Whse. Co.....	78
Broadway Storage Co. (R. I.).....	131
Broadway Storage Whse. (New York).....	112
Brokers Office & Warehouse Co.....	90
Brown Van & Storage Co., Inc.....	80
Brunton Transfer & Storage Co.....	80
Buffalo Storage & Carting Co.....	111
Burnett Storage & Trucking Co.....	99
C	
Cadillac Storage Co.....	97
Cady Moving & Storage Co.....	131
California Truck Co.....	74
Cameron Transfer & Storage Co.....	100
Camp Transfer & Storage Co.....	80
Campbell Stores.....	113
Campbell's Warehouse.....	117
Carey's Transfer & Stge. Co., Inc. (S. C.).....	131
Carey's Transfer & Storage Co. (Minn.).....	101
Carnahan Transfer & Storage Co. (Pa.).....	126
Carolina Stge. & Dist. Co.....	118
Carolina Transfer & Stge. Co.....	118
Carpenter Storage, Inc.....	117
Caruso & Co., G.....	88
Cater Transfer & Stge. Co.....	136
Cartheart Van & Stge. Co.....	80
Cedar Rapids Transfer & Stge. Co.....	89
Central Storage Co.....	103
Central Storage & Forwarding Co.....	82
Central Warehouse Co. (Balti- more).....	93
Central Warehouse Co. (Ind.).....	86
Central Warehouse Co. (Saginaw).....	99
Central Warehouse Co. (St. Paul).....	101
Charleston Whse. & Fwdg. Co.....	131
Charlie's Transfer Co.....	72
Chattanooga Trans. & Stge. Co.....	131
Chattanooga Warehouse & Cold Storage Co.....	131
Chelsea Fireproof Stge. Whses. Inc.....	113
Cincinnati Terminal Whse. Co.....	119
Cincinnati Tobacco Whse. Co.....	119
City Storage, Ltd.....	138
City Transfer & Storage Co.....	73
City Transfer Co.....	139
City View Apt. & Storage Co.....	118
Clancy Carting Co., J. C.....	116
Cleveland Storage Co.....	120
Coburn Stge. & Whse. Co., Henry.....	87
Cold Spring Storage Co., Inc.....	111
Columbia Storage Warehouses.....	113
Columbian Stge. & Transfer Co.....	98
Columbian Warehouse Co.....	130
Colyear Van & Stge. Co.....	74
Commercial Truck & Storage Co.....	136
Commercial Warehouses.....	91
Commonwealth Ice & Cold Storage.....	94
Consolidated Trucking & Stge. Co.....	112
Continental Warehouse Co.....	81
Cotter Warehouse Co. (Akron).....	119
Cotter Warehouse Co. (Colum- bus).....	122
Cotter Warehouse Co. (Mans- field).....	123
Cotter Warehouse Co. (Toledo).....	123
Coyne Stge. Warehouses.....	105
Crabtree Transfer & Stge. Co.....	131
Crandall Transfer and Warehouse Co.....	86
Cummings Storage Co.....	119
Cuneo Storage Co.....	113
Curtis Bros. Transfer Co.....	120
D	
D. & D. Transfer & Stge. Co.....	87
Daggett Transfer & Stge. Co.....	90
Daniels Storage Co., R. L.....	133
Daniels Transfer & Storage Co.....	85
Davidson Transfer & Stge. Co.....	93
Day & Meyer-Murray & Young.....	114
De Camp, Job.....	108
Delaware Trucking Co.....	88
Delcher Bros. Storage Co.....	79
Depenthal Truck & Storage Co.....	123
Detrol Storage Co.....	97
Dewey & Co., George E.....	78
Dietrich, Jacob.....	105
Diets Storage Warehouse.....	117
Doe, Delor.....	116
Donaldson Transfer & Stge. Co.....	129
Donnelly, Reuben H.....	126
Dorchester Fireproof Stge. Whse.....	94
Drinkwater's Sons, Inc., Henry G.....	78
Driver Storage Co.....	73
Duluth Van & Stge. Co.....	99
Dunham & Reid, Inc.....	111
Dunn Co., D. W.....	94
Duquesne Warehouse, Inc.....	129
Dye Fireproof Warehouse, Inc.....	111
E	
Eagle Whse. & Stge. Co.....	110
Economy Trans. & Stge. Co.....	132
Edwards Trans. & Stge. Co.....	122
Elbridge Exp. & Stor. Whse. Co.....	105
Elkin Storage & Tr. Co.....	85
Elkin Transfer & Stge. Co.....	135
Elston Packing & Storage Co.....	99
Empire Storage Co.....	82
Erie Storage & Carting Co.....	125
Erie Warehouse Co.....	125
Ewert & Richter Exp. & Stge. Co.....	89
Ewing Transfer Co.....	90
Eyres Storage and Dist. Co.....	136
F	
Federal Fireproof Storage Co.....	82
Ferrin Van & Storage Co.....	104
Ferris Warehouse & Storage Co.....	79
Fidelity Fireproof Storage.....	74
Fidelity Storage & Transfer Co.....	101
Fidelity Storage Co. (Baltimore).....	93
Fidelity Stge. & Whse. Co.....	127
Fink & Son, L.....	110
Fireproof Stge. & Transfer Co.....	99
Fireproof Whse. & Storage Co.....	122
Flint Fireproof Storage Co.....	98
Ford Transfer & Storage Co.....	104
Forest Hills Fireproof Storage.....	112
Forest Hills Storage & Warehouse.....	94
Forest Monger Trans. & Stge. Co.....	88

(Continued on page 144)

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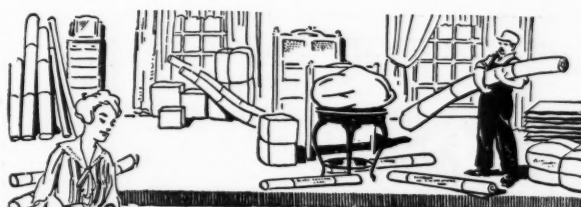
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Nationally Known
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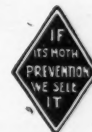


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men.

Nothing like it on the mar-
ket. Developed and refined
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your needs.

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Write today for prices and trial offer.

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Cleveland, O.



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TO PACK GOODS SAFELY

How's your
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Baled Wood Wool
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Write to

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H. W. SELLE & COMPANY

1000-1020 N. Halsted St.

CHICAGO

SHIPPERS INDEX—Continued

(Continued from page 143)

Fort Erie Warehouses & Docks...125
Fort Wayne Storage Co....87
Franklin Fireproof Warehouses...110
Franklin Warehousing Co....126
Fraser & Kelly...109
Furniture Mfrs. Whse. Co....98

G

Galt-Block Warehouse Co....92
Gardner Storage Co....79
Garfield Park Storage Co....82
Gazette Transfer & Stge. Co....72
Gelpe, J. Norman...93
General Fireproof Storage Co....123
General Warehousing Co....101
Gibbs Express Co....95
Gibbs, Thomas H....105
Gifford Warehouse Co....138
Gilbert Storage Co., Inc....114
Glasgow Storage & Cartage Co....138
Gleason Bros....96
Glenn & Sons, O. J....111
Godley's Storage Warehouses...127
Goodman Warehouse Corp....105
Gordon Fireproof Whse. & Van
Co....105
Gottry Carting Co., Sam....117
Great Central Warehouse Co....97
Greig Cartage & Stge. Co....120
Griffin, The Transfer Man....124
Guilford Warehouse Co....93

H

Hamman Bros. Transfer & Stge.
Co....85
Hansen Storage Co....137
Harders Fireproof Storage & Van
Co....82
Hardesty Trucking Co....88
Harrigan's Stge. Ware., Inc....110
Harris Transfer & Warehouse Co. 72
Harrisburg Storage Co....125
Hart Transfer & Storage Co.
(Minn.)...99
Hart Transfer & Storage Co.
(Wis.)...137
Hartford Despatch & Whse. Co....78
Haslett Warehouse Co....76
Hasley Bros. Transfer & Stge....129
Haugh & Keenan Stge. & Tr. Co.129
Headley's Express & Storage Co.125
Hebard Storage Warehouses...83
Herbert & Son Co., Wm....123
Hess-Strickland Transfer & Stge.
Co....72
Hickey Warehouse Co....75
Hildebrand Bros....127
Holmes Fireproof Warehouse, Jos.124
Hollingsworth Warehouses...80
Hollywood Storage Co. (Holly-
wood)...73
Hollywood Storage Co. (Los An-
geles)...71
Holman, Geo. B....105
Hummel Warehouse Co....121
Hunter Transfer Co. (Arkansas) 73
Hunter Transfer Co. (Texas)...135

I

Imperial Transfer & Stge. Co.,
Inc....103
Indiana Terminal Warehouse Co. 87
Indianapolis Warehouse Co....87
International Whse. Co. (El
Paso)...133
Inter-State Transfer & Stge. Co. 90
Iowa Warehouse Co....90
Ivory, Inc., John...97

J

Jawaica Storage Warehouse...112
Jefferson Safety Stge. Warehouse
Co....109
Jennings-Cornwall Whse. Co....135
Jennings-Nibley Warehouse Co. 71
Jobbers Warehousing Co....79
Johnson Storage & Moving Co....77
Johnson Transfer Co....81
Jones-Clark Trucking & Stge. Co.117
Jones, Orrin E....131
Judson Freight Fwd. Co....3

K

Kedney Warehouse Co. (Minn.) 100
Kedney Warehouse Co. (N. Dak.) 118
Kedney Warehouse Co. (St. Paul) 102
Kennett-Patterson Trans. Co....77
Kent Storage Co....99
Keystone Delivery Transfer & Stge.
Co....126
Keystone Express & Storage Co. 126
Keystone Warehouse...125
Kinderman & Sons, Julius...114
King Storage Warehouse, Inc....117
Kneeland, Bill...96
Knickerbocker Storage Co....120

L

La Crosse Terminal Whse. Co....137
Lake Shore Moving & Storage Co.120
Lancaster Storage Co....126
Landwehr Transfer & Storage...101
Langan, B. A....103
Lansing Storage Co....99
Lasham Co., Edw....83
Lawrence Warehouse Co. (Oak-
land)...75
Lawrence Warehouse Co. (San
Francisco)...76
Lazarus Co., F. G., 20th Century
Storage...124
Leclerc Terminal...121
Lee & Sons Co., H. C....123
Lee Bros., Inc....114
Lehigh Warehouse & Trans. Co.,
Inc....108
Lemon, Virgil F....88
Lentz Transfer Co....118
Leonard Warehouse, Inc. (N. Y.) 111
Lincoln Fireproof Warehouse Co.137
Lincoln Storage Co. (Cleveland) 121
Lincoln Storage Warehouses...105
Loeb & Son, H....127
Long Island Stge. Warehouses...110
Los Angeles Warehouse Co....74
Louisville Public Warehouse Co. 91
Lynch Transfer Co....89
Lyon Fireproof Storage Co....74

M

McCann's Storage Whse. Co....118
McClintock Stge. Whse. Co....76
McCormick Warehouse Co....93
McDougall Terminal Whse. Co....100
McGinnis Co., James...126
McLaughlin Warehouse Co....92
McNally Bros., Inc....114
Machinery Warehouse Co....83
Maier Sales & Storage Co....137
Malters Transfer & Storage Co.101
Mead Red Head Co....121
Memphis Terminal Corp....132
Mercantile Stge. & Whse. Co....105
Mercer Transfer & Stge. Co....89
Merchandise Storage Co....122
Merchants Storage & Transfer Co.
(Colo.)...77
Merchants Transfer & Storage Co.
(Ill.)...86
Merchants Transfer & Storage Co.
(Iowa)...89
Merchants Transfer Co. (Ohio) 123
Merchants Transfer Co. (Texas) 134
Merchants Warehouse Co....97
Merchants Warehouse & Dist. Co. 83
Meridith, F. M....85
Metropolitan Fireproof Warehouse
Corp....115
Metropolitan Moving Co....97
Metropolitan Stge. Whse. Co....96
Michigan Terminal Whse. Co....96
Midland Whse. & Transfer Co....83
Miller-Callison Stge. & Transfer
Co....136
Miller North Broad Storage Co.127
Milward, W. R....91
Minneapolis Trans. & Whse. Co.100
Model Storage Warehouses...108
Moeller Transfer & Storage Co....72
Monarch Storage & Warehouse Co.111
Monroe Warehouse Co., Inc....117
Montgomery & Co., Carpet Clean-
ing Co....93
Morgan & Brother....115
Mott Haven Storage Whse. Co.115
Mrazek Moving & Storage Co....104
Muegge-Jenull Warehouse Co....134
Murdoch Storage & Transfer Co.129
Murphy Transfer & Storage Co.120
Muskegon Transfer & Stge. Co....123

N

National Freight Forwarding Co.115
National Storage Co....99
National Terminals Corp., Second Cover
National Whse. & Dist. Co....134
Neal Fireproof Storage Co....121
New Jersey Warehouse Co., Inc.108
Ninth St. Terminal Whse. Co....121
Norfolk Warehouse Corp....135
North Pier Terminal Co....83
Northeastern Stge. & Dist. Co....96
Northern Ave. Stores & Dock
Corp....95
Northwestern Transfer Co....124

(Continued on page 145)

SHIPPERS INDEX—Continued

(Continued from opposite page)

O	
O'Brien's Fireproof Stge. Whse., Inc.	112
Ohio Warehouse Co.	122
O. K. Storage & Transfer Co.	92
O. K. Transfer & Storage Co. (Ark.)	72
O. K. Transfer & Storage Co. (Oklahoma City)	124
O'Neill Bros. Transfer Stge. Co.	86
Ontario Warehouse Co.	84
Oregon Transfer Co.	124
Orlando Bonded Warehouse, Inc.	79
Oshkosh Storage Co.	137
P	
Pacific Storage & Tr. Co., Inc.	136
Pacific Storage & Warehouse Co.	105
Pagels, Fred	119
Panhandle Storage Warehouse	119
Park Stge. Whse. Co.	105
Parke Warehouses	85
Passale Transportation Co.	108
Patterson Transfer Co.	133
Peasley Transfer & Storage Co.	80
Pennsylvania Terminal Whse. Co.	104
Petry Express & Storage Co.	109
Pettit's Storage Warehouse Co.	87
Philadelphia Local Express	127
Pioneer Truck & Transfer Co.	73
Pittsburgh Distributing Co.	129
Pittsburgh Transfer & Storage Co.	90
Popple Transfer & Storage Co.	78
Port Newark Terminal Whse. Co.	106-107
Post, R. F.	130
Poston Storage Warehouses, Inc.	133
Premier Fireproof Stge. Co.	74
Prudential Stge. & Moving Co. (Los Angeles)	74
Q	
Quakenbush Warehouse Co.	130
Queen City Warehouse Corp.	111
Quincy Mkt. Cold Storage & Warehouse Co.	95
R	
Radial Warehouse Co.	103
Railway Terminal & Whse. Co.	84
Rathbun Carriage Co.	123
Red Line Transfer & Stge. Co.	89
Replogle, I. D.	126
Rice Storage Corp., A. C.	111
Richards Storage Co.	99
Richards Trucking & Whse. Co.	75
Richmond Storage Warehouses	115
Ricks Storage & Distributing Co.	102
Riverside Storage & Carriage Co.	98
Riverside Truck & Storage Co.	96
Robinson Storage Co.	97
Rochester Carting Co.	117
Rock Island Transfer & Storage Co. (Okla.)	123
Rock Island Transfer & Storage Co. (Ill.)	86
Rockford Storage Warehouses	86
Rose Warehouse Co.	133
Rosenthal Fireproof Stge. Co.	90
Rowe Transfer & Coal Co.	132
Rucker Bonded Whse. Corp.	118
S	
Safety Storage Co.	109
Safety Trans. & Stge. Co., Inc.	91
Sage Trans. & Stge. Co., Inc.	78
St. Paul Terminal Warehouse Co.	102
San Francisco Whse. Co.	76
Santini & Sons, A.	116
Savannah Bonded Whse. & Tr. Co.	80
Schantz Co., Joseph A.	117
Schneider Storage Co., V. H.	119
School St. Stge. & Whse. Co.	96
Seabey Fireproof Stge.	134
Scott Bros. Fireproof Stge. Co.	122
Security Storage & Trust Co.	94
Security Storage & Van Co.	100
Security Storage Warehouses	108
Security Van & Storage Co.	76
Security Whse. Co. (Ga.)	80
Senece Warehouse Co., Inc.	117
Service Drayage & Whse. Co.	75
Shanahan Transfer & Stge. Co.	130
Shank Fireproof Stge. Co.	87
Sheldon Transfer & Storage Co.	96
Silver, Martin, Esq.	127
Skellet Co.	101
Smith Dray Line	131
Smith's Transfer & Storage Co.	79
Soo Terminal Warehouse	84
South Jersey Warehouse Co.	
South Jersey Warehouse Co.	128
Southee, John B.	109
Souther Warehouse Co.	76
Southern Bonded Warehouse Corp.	135
Southern Tier Stge. & Sales Co.	112
Southeast Shipping & Storage Warehouse	84
Southeast Storage & Van Co.	87
Standard Storage Co.	95
Standard Warehouse Co.	92
Standard Warehousing & Mer. Co., Ltd.	138
State Center Warehouse & Cold Stge. Co.	73
Stockton Transfer Co., Jos.	85
Storage & Transfer Co., Ltd.	138
Strahon Transfer & Storage Co.	131
Strang's, Charley	110
Strang Warehouses, Wm. H.	111
Sunlight Storage Warehouse Co.	111
Sunrise Storage Co., Inc.	115
T	
Tabb Storage Warehouse & Freight Transfer Line	91
Taylor-Edwards	136
Terminal Warehouse Co. (Ark.)	72
Terminal Whse. Co. (Pa.)	128
Terminal Warehouse Co. (R. I.)	130
Terminal Warehouse Co. (Neb.)	105
Terminal Wharf & Railroad Whse. Co.	95
Tiffany Fireproof Storage Whses.	116
Tunnes Transfer & Storage Co.	102
Trucker Stge. & Fwdg. Co.	116
Topeka Transfer & Stge. Co.	90
Tripb Warehouse Co.	88
Troth's Model Warehouses	128
Tucson Warehouse & Transfer Co.	72
Tulsa Storage & Transfer Co.	124
Twentieth Century Stge. Whse. Co.	128
Tyler Warehouse & Storage Co.	135
U	
Union Storage Co. (Dayton)	122
Union Storage Co. of Erie	125
Union Storage & Warehouse Co.	118
Union Terminal Whse. Co. (Cal.)	75
Union Ter. Whse. Co. (Fla.)	79
Union Trans. & Stge. Co. (Ky.)	91
Union Trans. & Stge. Co. (Tex.)	134
Union Transfer Co.	118
United Fireproof Warehouse Co.	137
United States Storage Co.	79
United Warehouse Co. (Kansas City)	103
United Warehouse Co. (Seattle)	136
United Warehouse Co. (Wichita)	91
Universal Terminal Whse. Co. (Galveston)	133
Universal Terminal Whse. Co. (Houston)	131
V	
Valley Van & Storage Co., Inc.	73
Virginia Bonded Whse. Corp.	135
W	
Wagner & Son	81
Wagner Fpl. Stge. & Truck Co.	123
Wald Transfer & Storage Co.	134
Wallace Trans. & Forwarding Co.	119
Ward, C. A.	138
Ward & Bros., Hugh F.	116
Ware Trans. & Stge. Co.	90
Warner Warehouse Co.	88
Waterbury Storage Co.	79
Weicker Transfer & Storage Co.	77
West End Storage	86
Western Michigan Trans. & Stge.	99
Western Warehousing Co.	84
Westheimer Warehouse Co.	134
Westland Distribution & Storage Warehouse Co.	75
Wiley & Nichols Co.	133
Wilkes-Barre Warehousing Co.	130
Williamsport Storage Co.	130
Wilshire Fireproof Storage Co.	75
Windsor Storage Co.	122
Winona Storage & Transfer Co.	102
Winslow Trucking Co.	117
Withers Transfer & Storage Co.	79
Wolverine Storage Co.	98
Y	
Young, William	116
Z	
Ziegler-Schafer Co.	119

(For Index to General Advertisers, see page 142)

"Star" Brand Wagon Pads "Stand Up"



Extra heavy denim that loses no softness by its weight. Thick, soft cotton filling. Stitched in squares that make each square a cushion in itself. The wonderful durability and satisfaction of "Star" Brand Pads has given them a nation-wide reputation and created an equally wide demand. Found from coast to coast on the best vans.

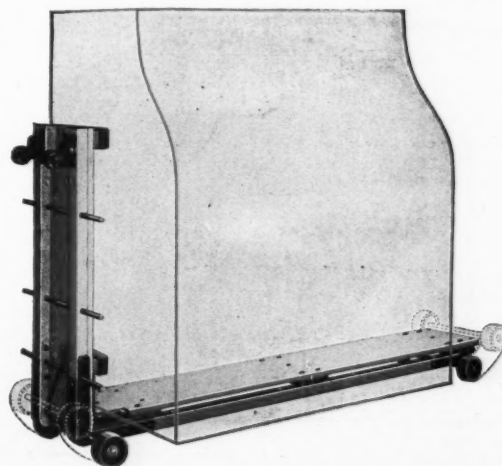
No.	Cut Size of Cloth	Per Doz.
24	6 ft. x 6 ft. 8 in.	\$32.00
26	6 ft. x 6 ft.	29.50
28	4 ft. 6 in. x 6 ft.	25.50
30	3 ft. x 6 ft.	17.00
Phonograph Covers, Each		5.00

STAR QUILT MFG. CO.

1851-55 W. Roosevelt Rd.

Chicago, Ill.

The Skid Truck or Tray



Do you use trucks? Have you tried out CITY SKID TRUCK? Made of hard wood, with polished steel soles, well bolted together. NO SCREWS. Sliding handles and large wheels to insure easy moving.

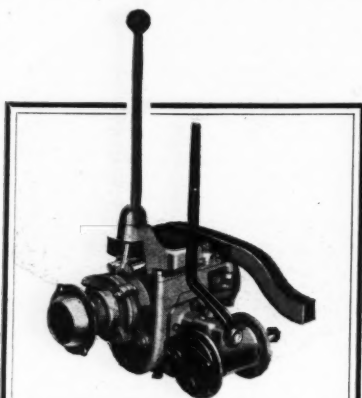
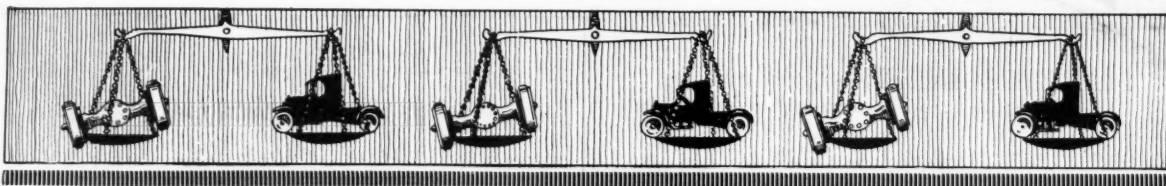
Also, Sill Trucks, eight styles of End Trucks, Piano Hoists, Covers and special straps. Ask for circular.

Manufactured by

Self-Lifting Piano Truck Co.

Findlay, Ohio

WHEN WRITING ADVERTISERS MENTION DISTRIBUTION & WAREHOUSING



The Super Warford with Warford Power Take Off Unit assembled.

If Your Ford Dealer Hasn't Warford, Call On The Nearest Distributor

Atlanta-Houdaille Co. - Atlanta, Ga.
 C. G. Spring & Bumper Co. - New York City
 George Dietrich - Spokane, Wash.
 Dine-DeWees Co. - Canton, Ohio
 Dutee Wilcox Flint, Inc. - New Haven, Conn.
 Dutee Wilcox Flint, Inc. - Providence, R. I.
 Dyke Motor Supply Co. - Pittsburgh, Pa.
 Foster-Warford Co. - Auburn, N. Y.
 Hall-Warford Co. - Charlotte, N. C.
 Hammel-Gerke Co. - Los Angeles, Cal.
 Kenney Equipment Co. - Indianapolis, Ind.
 Houdaille-Polk Co. - Dallas, Texas
 McEee-White Corp. - Minneapolis, Minn.
 McMahon Bros. - Morrisville, Vt.
 Massachusetts Warford Co. - Haverhill, Mass.
 Motor Specialties Co. - Denver, Colo.
 W. C. Nabors - Mansfield, La.
 Price Auto Service Co. - Wichita, Kan.
 Sieg Company - Davenport, Iowa
 Sieg-Warford Co. - Chicago, Ill.
 Transmission Sales Co. - Stockbridge, Mich.
 Wade and Dunton Motors, Inc. - Lewiston, Me.
 Warford-Eastern Co. - Philadelphia, Pa.
 Warford-Equipment Co. - Seattle, Wash.
 Warford-Pacific Co. - San Francisco, Cal.
 Warford-Sales Co. of S. Carolina - Columbia, S. C.
 Warford-Western Co. - Kansas City, Mo.
 Wayne Spinks Company - Memphis, Tenn.
 Wholesale Auto Supply House - Tampa, Fla.
 Woodward Sales Co. - Portland, Ore.

In Canada:-

The Warford Corporation of Canada, Ltd.
 Windsor, Ont., Toronto, Ont., Montreal,
 Que., Regina, Sask., Vancouver, B. C.,
 Calgary, Alta.

The "Heavy" Truck is a Has-Been

Ford Truck production up to and including 1922	-	475,160
Ford Truck production for 1923	-	261,661
Ford Truck production 1924	-	202,140
Total Ford Trucks produced as of December 31, 1924	-	938,961

No one can glance over the truck production figures of the Ford Motor Company and doubt the success of the motor truck as a practical transportation unit.

The future of the "heavy" truck is another story. Built upon the assumption that bulk and weight are the essentials of capacity and stamina, that the truck must weigh as much or more than the load it carries, the "heavy" truck is passing into the limbo of the gargantuan "pleasure" car that, unhappily for gas station operators, is all but extinct.

The future of the "heavy" truck is behind it. It is an old pensioner that has been of tremendous value in founding and developing the industry and in providing its operators with the best truck performance available to the age in which it flourished. But it has been only a step in the evolution of the ultimate transportation unit.

Today's truck is the "light" truck, for already the big fellows are outnumbered by units of one-ton capacity and less, of which 78 per cent are Fords! Today, whatever your hauling problems may be, you can *Fordize* your business.

For loads of one ton and less there is no better truck than the Ford just as it comes to you from the factory. Combine it with the Warford Auxiliary Transmission and you have the same dependable Ford performance with two-ton capacity and speed wagon pace—at Ford one-ton operating cost. The Warford equipped Ford truck operated with a trailer for loads of three to four tons is giving fleet owners a new conception of that much abused word "economy." The hauling range of Ford equipment is practically limitless.

Ask Your Ford Dealer

Warford

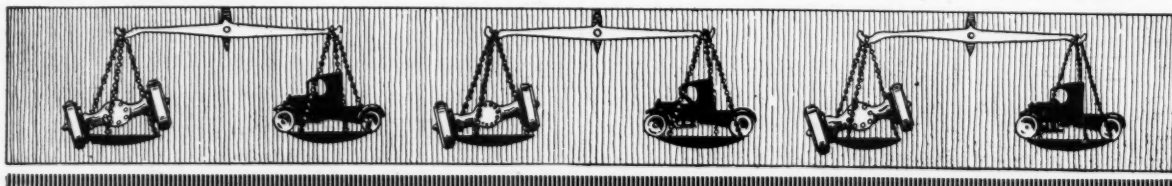
AUXILIARY TRANSMISSION

"To Fordize Is To Economize"

The Warford Corporation

44 Whitehall Street, New York City

Neither The Warford Corporation nor its manufacturers has any connection whatsoever with any company manufacturing motor cars.



WHEN WRITING ADVERTISERS MENTION DISTRIBUTION & WAREHOUSING

Use PIONEER FURNITURE PADS

Big volume production, modern, labor-saving machinery and many years of experience in the business make possible the remarkably low prices of these standard pads. Covered with extra heavy, strong khaki drill — $3\frac{3}{4}$ yards to a pound.

SPECIAL INTRODUCTORY PRICES!

*Increase Your Business
with*

PIONEER FURNITURE PADS

Pioneer Furniture Pads are known from coast to coast for their thorough protection and exceptional wear - resistance. Nothing has ever been done to impair their high quality — *everything has been done to im-*

prove it whenever possible. Pioneers are now made in the exclusive wave-stitch design for even greater endurance and economy. Pioneer users are the best advertisers we have.

LOUISVILLE BEDDING CO., *Incorporated*
LOUISVILLE, KENTUCKY

***Buy Now at Special
Low Prices***

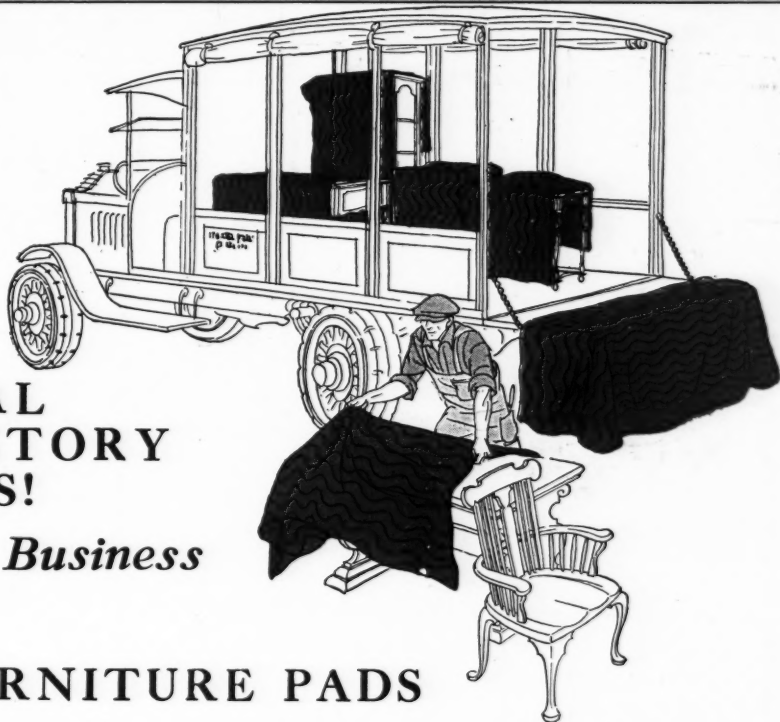
Pioneer Pads are made in the following sizes, *your name neatly stenciled on each pad when requested on orders of twelve or more:*

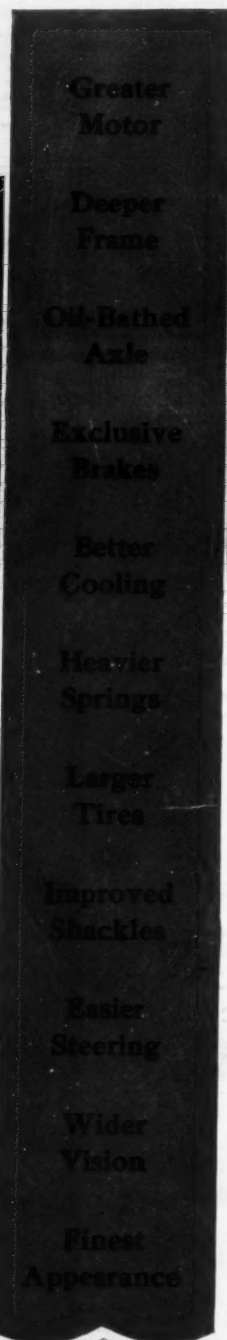
36"x68", about 45 lbs., per doz. \$16.50
52"x68", about 75 lbs., per doz. 24.50
68"x80", about 100 lbs., per doz. 32.00

The 68"x80" size is the most practical for miscellaneous use, but you should have a few small sizes.

Write for prices on Pioneer Music Cabinet Pads and special Pioneer Pads for tables and beds.

SAVE TIME, MONEY, LABOR AND CUSTOMERS





YELLOW CHASSIS



Buying Points

Listing all the improvements of the great new 3-Ton Republic, is writing the complete specifications. Right down to the rivets this truck expresses the latest truck engineering, sponsored by the old Republic reputation for lowest cost per mile, per ton, per year.

Republic has more trucks in use than any other exclusive truck maker because only Republic invariably produces values like the new 3-Ton.

It is just one of a line of such fine trucks suited to all warehouse haulage. Republic dealers have the figures for you.

REPUBLIC MOTOR TRUCK CO., Inc., Alma, Michigan
More Trucks in Use than any other Exclusive Truck Builder

REPUBLIC

